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No. XI. OF VOL. I., 1923. LONDON, SATURDAY, MARCH 17, 1923. Pp. 128—Price 1s.
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LATE SURGEON TO THE LONDON HOSPITAL, ENGLAND; MEMBER OF THE INTERNATIONAL SOCIETY OF UROLOGY; MEMBRE DE L'ASSOCIATION FRANÇAISE D'UROLOGIE.

FIRST it must be my pleasant task to thank Dr. William J. Mayo, Dr. Charles E. Barnett, and the Mississippi Valley Medical Association for the honour they have done me in asking me to address so distinguished a body of American surgeons. I feel very deeply moved by the warm reception accorded to me here. The Mayo Clinic is the Mecca of the surgical world. Just as the Mahomedan attained merit by making a pilgrimage to Mecca, so the surgeon, in whatever country he works, looks forward to the time when it is his privilege to visit this shrine of modern surgery raised by the genius of the brothers Mayo. When he has made the pilgrimage he can never be quite the same again. He will return to his work at home with his outlook widened and his standard of work ever set by this amazing organisation of genius. Working as I do in a land of individualists, but with my eyes ever turned to the advantages of organisation and team-work, I can only say that to visit this shrine is to me an inspiration and will be, I hope, a never-to-be-forgotten memory. It is difficult for you to realise with what feelings, not only of admiration but also of affection, we surgeons of other countries are possessed when we gaze upon Rochester, which calls to our minds a vision of what the future of medicine may yet bring to suffering humanity.

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### DIFFICULTIES OF THE PROBLEMS.

Modern surgery demands more and more a knowledge of end-results. How can it otherwise justify the surgical attacks made upon disease, save by showing that thereby at least some valuable lives are saved and others rendered more comfortable and more prolonged? I will therefore endeavour to confine my remarks as much as possible to what I have found practicable in attacking the problem of bladder cancer. I can only plead for my results first that the problem is one of intense difficulty because far less than half the cases are sent up at a time when surgical attack with a prospect of cure or relief is possible; secondly, that I have only been working at the problem practically for a brief ten years, some years having been cut out of my working life by the European war, when war surgery took precedence over civil surgery; thirdly, that it has been my lot to work under the English individualistic system, as a general surgeon in a large general hospital, to whom has fallen only his ordinary share of bladder cancer cases; fourthly, I have had to work at the problem whenever opportunity offered in a busy life devoted to dealing with a great variety of other general and special surgical problems.

The problem of bladder cancer has appealed to me ever since 1903, when it was first my privilege to work under the stimulating auspices of Hurry Fenwick, my revered master and teacher. Into his wards I saw coming in considerable numbers those pathetic sufferers from bladder cancer, some with late cancer, with excruciating pains and terrible strangury, some with recurrent papillomata, their faces pale as paper and their tissues completely exsanguinated. Hurry Fenwick wrestled with the problem by means of open operation carried out from within the bladder for papillomata, and with partial and total cystectomy for true cancer. Yet I felt that the technique held room for improvement. Too often the cases of papillomata recurred and returned again and again for operation. I reflected that, after all, many cases of malignant papilloma and some cases of papillomatous carcinoma were for a definite period confined to the bladder wall itself, and that the spread to the tissues around and to the lymphatic glands was usually slow. Here was room for success if a more radical type of operation could be devised. The cause of death was not so much spread to distant parts as local accident—such as loss of blood, pain, and cystitis, followed by dilated ureters, pyelitis, and uræmia. Could one but get the cases early, and devise a more radical type of operation, an increasing amount of success and some lasting cures might be expected.

### PROVISIONAL CONCLUSIONS.

I considered an attempt to work out the spread of bladder cancer along the lines of Sampson Handley's work on cancer of the breast, but I found that this was impossible as so few cases of bladder cancer ever came to the post-mortem room at the hospital; they died at home or in the infirmaries. Such a research awaits the earnest worker and would bear rich fruit. I had therefore to use what opportunities operations afforded for noting the spread of bladder cancer. My provisional conclusions are that malignant papillomata and even some papilliferous carcinomata of the bladder break through the muscular coat of the bladder fairly late. At first the muscular coat forms a barrier to the malignant cells, so that they tend to spread in the submucous coat of the bladder and give rise to small daughter warts in their neighbourhood. They also spread by local contact and implant their offspring on opposing sides of the bladder. Even when they break through the muscular coat the progress of the majority, which tend to lie just above the ureters, is barred for some time by overgrowth of dense fibro-fatty tissue in the connective tissues that surround the base and sides of the bladder, accompanied by considerable overgrowth of the veins in this tissue. Less often these growths lie on the trigone and so may burst into the rectum; or high up on the superior and lateral walls when they break into the peritoneum and give rise to perforation and peritonitis or intestinal obstruction from adhesions or even multiple growths in peritoneum and liver. These growths are the exception; the majority invade the pelvic cellular tissue that houses the lymphatics which run up along the sides and back of the pelvis, first to a gland that lies on the side of the external iliac vein at the middle of the pelvic brim, secondly to a group of glands which lies just beneath the bifurcation of the aorta. From these two sets of glands the cancer cells may eventually spread to the lumbar chain on each side, but this appears to be a late event except in rapidly growing excavating carcinoma of the bladder. Bony metastasis is an uncommon event.

I concluded that in some forms of malignant disease of the bladder, especially the common papillomatous type in the region of one ureter, the lymphatic spread of cancer cells was slow and long delayed by nature's defensive forces. That the common causes of death were not so much invasion of distant parts as the result of local accidents of position such as dilated ureters and uræmia, infection cystitis and pyelitis, exhaustion from loss of blood, spread to rectum and peritoneum. Get the cases early enough and diathermy or a well-designed operation might

hope to remove all the local growth, and this is what I have found. It is true I have not been able to get as many as half my cases, perhaps not a third, sent up at a stage where radical treatment has been possible. This is partly the fault of the patient who neglects his symptoms, but I am afraid it is sometimes the fault of the medical adviser, when he fails to realise that when faced with a case of painless hæmaturia, *the only effective course to pursue is to insist on immediate cystoscopy*. The emergency is just as important and urgent as those of bleeding from the womb or even of acute appendicitis, yet many men will not realise this. The lure of drugs still appeals; they order medicine, nature stops the bleeding. The doctor praises his medicine and the patient believes him until the bleeding has returned again and again; doctor and patient become alarmed, the patient is sent up for cystoscopy, and they are then surprised to find it is too late for effective treatment. This paper will have been written in vain if I cannot persuade an increasing number of medical men that the outlook and prospects of cure for bladder cancer have immensely improved. Epithelial tumours of the bladder can be cured, but only, in a large number of cases, if the practitioner insists on immediate cystoscopy.

*Bladder Habit.*—I have also come to the conclusion, based on experience, but incapable, I suppose, of absolute proof, that some bladders become the victim of a vicious habit or tendency to develop papillomata which is inherent in the whole epithelial membrane. In several patients I have destroyed by diathermy one or more early bladder tumours of papillomatous or ulcerative type and they have remained perfectly well for some years; yet they have eventually returned again with early fresh tumours in quite different parts of the bladder. I believe these represent not recurrences but entirely fresh tumours.

### EDWIN BEER'S DIATHERMY TREATMENT.

In casting about for a suitable type of operation I came to the conclusion that the old method of opening the bladder on its anterior wall and snipping away the growths was not radical enough. I felt that the bladder must be shelled out before opening it and its blood-supply controlled so that one could cut out in one piece from the outside the invaded cellular tissues and large pieces of the bladder wall and so hope to get wide of the growth. I was feeling my way along these lines in the years 1911 to 1914 when I read two papers which took me a long way on the road. The first was by Nicolich, of Trieste, the reference to which I cannot now trace, who published experimental work on dogs, whereby he showed that the whole of the bladder except the trigone could be removed from dogs and yet the bladder would very quickly re-grow and form a fresh and active organ. The second was a paper by Bentley Squier, of New York (1914), to whom I cannot sufficiently acknowledge my indebtedness. I was feeling my way along his lines when his paper appeared, but it showed me how to step boldly forward. This is how the problem shaped itself for me as regards partial cystectomy. Meantime another star had arisen above the urinary horizon when Edwin Beer, of New York, published his epoch-making papers on diathermy or fulguration for papillomata of the bladder in 1910 and 1911. It was given to Beer to make light of theoretical objections and to prove by practical demonstration that papillomata could be effectively destroyed by high-frequency currents applied through the operating cystoscope. Beer's work has revolutionised the treatment of papillomatous bladder tumours. I am ashamed to say that I did not appreciate what had happened until the autumn of 1913, when I obtained a suitable high-frequency machine and was able to begin work on my first cases in January, 1914. In 1914 I was able to publish one of the first papers on this subject in England.

### DIAGNOSIS.

The problem has thus become one calling for exquisite niceness of judgment in the diagnosis of bladder tumours. There are some cases where we can say at once, "This is a simple papilloma and will react to high frequency." It melts away under that treatment and the patient is saved from a terrible, long-drawn-out and fatal malady, and incidentally from a major operation with its definite risk to life—a point some doctors still fail to appreciate, as I shall point out later in this paper. There are others where we can say, "I am not certain, we must try the effects of diathermy." In some it is successful, in others it does no good, and these we then submit to subtotal cystectomy. In others we can say at once, "This is not a case suitable for diathermy" and we can proceed at once to subtotal cystectomy. Then there come a few exceptional cases where total cystectomy, and diversion of ureters may be attempted, but as we get the cases earlier diathermy, subtotal cystectomy, and perhaps radium will more and more oust the need for the operation of total cystectomy which is bound to remain a comparatively rare operation. Many of my cases of subtotal cystectomy were to all intents and purposes cases of total cystectomy, as in many of them more than three-quarters and even as much as seven-eighths of the bladder were removed. Finally, there come those quite inoperable cases which are often left alone or else submitted to permanent drainage. These are some of the saddest cases in surgery. More than half my cases arrived too late. It is in this type of case that radium, deep Rontgen ray therapy, and open diathermy may be used in the hope of palliation, and in the expectation of producing arrest of growth in some cases.

*Painless hæmaturia is a danger signal, demanding cystoscopy at the earliest possible moment. Seventy out of every hundred cases of painless hæmaturia are suffering from a tumour of the bladder or kidney.* These statements might be framed and hung up like the old-fashioned texts in every surgery throughout the land. Occasionally two other symptoms are met with—"pulled ureter," or pain in one kidney produced by pulling of the tumour on the ureter or by blocking thereof, and "corked urethra," or intermittent interruption of the stream of urine, the tumour getting caught in the entrance of the deep urethra. One patient treated by me by means of cysto-diathermy went for three years without trouble. Then he told me he noticed a peculiar feeling in his bladder which he could not describe but which he had noticed before previous to his first attack of hæmaturia. Like a wise man he came up at once for cystoscopy though he had noticed no bleeding. There at once could be seen a tiny fresh papilliferous carcinoma which I was able to destroy with one diathermy treatment, and he has since remained perfectly well.

The proportion of males to females in this series is 127 to 30. As regards the duration of symptoms, one patient had bled for more than ten years before being sent up for cystoscopy, yet I was able to cure him permanently by one diathermy treatment. One patient, a doctor's wife, had bled for six years before she was sent up. Partial cystectomy cured her. One patient, a doctor, started bleeding at the age of 15. He had three or four operations at intervals up to the age of 35. He came up to me at the age of 45, having been bleeding on and off for 30 years. He had continued his practice in spite of terrible agony until the day before he came up. I transfused him with blood, hoping to improve his condition sufficiently for operation, but he died of uræmia within the week before anything more could be done.

### RESULTS OF DIATHERMY OPERATIONS.

I will now proceed to the most important part of my paper—namely, the actual results I have been able to obtain in cases of epithelial bladder tumours. I can only regret that the results are not better than they actually were. Out of 80 patients who came up early enough for diathermy or partial cystectomy, 41 or more than half are known to be alive and well—one 11 years, and many as long as seven and eight years, later; and it is probable that 55 are alive and well, though I cannot trace them to 1922. I believe that

even these figures will surprise many who are apt to think that bladder tumours are incurable. As a result of this ten years' experience I feel I have learned enough to justify a hope that the next ten years' results will be considerably better, provided I can obtain the cases at the earliest possible moment—namely, during the first attack of hæmaturia.

*Case Groups.*

| Group. | Cases. |
|---|---|
| 1. Simple papillomata or small recurrences noted after operation treated by diathermy through the cystoscope | 28 |
| 2. Inflammatory papillomata treated by diathermy | 2 |
| 3. Malignant papillomata treated by diathermy through the cystoscope | 26 |
| 4. Partial or subtotal cystectomy | 28 |
| 5. Cystotomy with local removal from inside the bladder | 17 |
| 6. Total cystectomy | 5 |
| 7. Ureterostomy | 6 |
| 8. Permanent drainage | 18 |
| 9. Where surgical treatment was not advised or refused | 24* |
| 10. Radium treatment | 5 |
| 11. In which wrong diagnosis was made | 2 |
| 12. True papillomata of the male urethra treated by diathermy | 1 |
| Total | 162 |

* Plus a number seen as out-patients and not recorded.

GROUP 1.—SIMPLE PRIMARY OR SMALL RECURRENT PAPILLOMATA.

This group contained 28 cases of primary simple papillomata of the bladder or of small single papilloma recurring after operation treated by diathermy applied through the cystoscope. As regards the differential diagnosis between a simple and malignant papilloma, in the first place I wish to state that I do not approve of taking portions of bladder growths away with an operating cystoscope for purposes of microscopic study. The risk and inconveniences involved in such a course seem to me to outweigh any possible advantage to be gained by the patient. The snipping-off of portions of living tumour inside the bladder is bound to result, in a number of cases, in the implantation of fresh tumours on other portions of the bladder wall. Again, when a surface portion of such a tumour is submitted to microscopical investigation I doubt if it is possible for anyone to give an accurate opinion as to the question of malignancy. Even when a histological report comes in after I have removed a bladder growth widely by open operation I find that the pathologist's report sometimes differs widely from the actual character of the tumour as manifested clinically. Nothing can be more surprising or call for so much food for thought as when we have opened a bladder and removed a portion of its wall containing what clinically is obviously a malignant tumour, than to receive a pathological report stating that microscopically the tumour is benign and not malignant. It makes one doubtful of the power of the microscope in distinguishing between these two classes of tumours. I am aware that Buerger has published (1916) a brilliant paper stating the minute differences whereby such a histological differentiation can be made. Nevertheless, my own experience does not lead me to trust such findings, and that being so I do not care to subject my patient to the risks of tumour implantation from disturbance of the living tumour in the bladder. One has to make a judgment as to the question of malignancy or benignancy on clinical grounds if one wishes to attain the best results. Especial attention is directed to the length of the history and a comparison of that with the size and appearance of the tumour, the delicacy and length of the fimbriæ and the pedicle, the appearance of the bladder in the region of the pedicle, the question of singleness or multiplicity, the feel of the base of the bladder per rectum or per vaginam, and finally in some cases by the reaction of the tumour to diathermy. Some tumours that look malignant react at once to diathermy, and others that look innocent prove refractory, eventually needing open operation; the latter are always malignant. The age of the patient is of relatively small importance. Some most malignant papillomata occur in the young and some quite benign in the aged. I believe that the best judgment can be made by an experienced cystoscopist, but even here many errors are bound to creep in and the problem must remain most difficult. Of the 28 cases that appeared to me to be clinically simple and including two or three cases of tiny recurrences appearing some years after an open operation, the average age was 43 years. The average number of diathermy treatments was rather less than three, and of these all appeared to be completely destroyed within a few months of the treatments.

As regards the late results, 21 cases have been traced up to 1922, and of these 19 cases show no signs of any recurrence—1 nine years, 3 eight years, 1 seven years, 5 six years, 4 five years, and 1 four years since treatment. It appears, then, that treatment by diathermy is far more permanent and less likely to give rise to recurrences than the old-fashioned open operation. This is because the tumour is cooked or coagulated and destroyed from the top to its very roots. There is, then, little chance of implanting seeds of fresh tumours during treatment as happened in the old operation, when so often within a year multiple seedlings appeared in the abdominal incision on the bladder side, a picture with which we must all be familiar. Two of these 21 cases relapsed, 1 six years and 1 two years later, and have since been submitted to open operation and are alive and well up to 1922. The remaining seven cases were followed up for a year or more, remaining quite free from recurrence, and it is justifiable to assume that they were cured. The results, then, are 19 known and 26 probable cures out of 28 cases treated by diathermy alone. The age of these patients was considerably higher than is usually considered common for cases of simple papillomata; the oldest was a man of 71 who has remained free and well for five years since his treatment, and the youngest 21. As is usual, the predominance of males over females is large—24 to 4—which makes the treatment all the more difficult. Another point worthy of note is the extraordinarily long time some of these patients had been allowed to bleed before they were referred for diagnosis. For instance, one man had bled on and off for ten years, yet when I saw him I was able to destroy a very large and long-pedicled papilloma at one sitting, and he has remained cured for eight years. The bright side of the picture appears in the case of a woman referred to me only eight days after her first hæmaturia; there I found a tiny little carcinomatous ulcer, the smallest I have ever seen, and destroyed it under an anæsthetic at one sitting of diathermy.

It may be asked whether there are any risks attaching to the treatment. There are, but they should be almost negligible in the hands of an expert. There was no fatality in the whole group of 54 cases treated by diathermy. There were two cases only where serious hæmorrhage followed a vigorous treatment. In one there was clot retention, which I remedied by means of a lithotrite and Bigelow's evacuator, with rest in bed for a few days. In the other, occurring at the hospital during the night after my treatment in the afternoon, and suffering from clot retention, the surgeon on duty opened the bladder and let out the clot, a quite unnecessary interference. If a papilloma is seen to be lying high up on the superior wall of the bladder against its peritoneal surface care should undoubtedly be exercised not to carry out too severe a treatment when the pedicle has been bared and exposed. In such cases an additional safeguard is to carry out treatment without any anæsthetic, so that the patient's feelings can be used as a guide to the severity of the burning or electro-coagulation.

I have only once seen cystitis arise after a treatment; it was undoubtedly set up by spontaneous infection of the sloughs as they came away after the treatment. This is because I am meticulously careful in the sterilisation of my equipment and always use a strong and efficient antiseptic (1/4000 oxycyanide of mercury) for filling the bladder. That is to say, I have carried out between 150 and 200 treatments in 54 cases and have only once seen cystitis follow. Otherwise the urine has remained perfectly clear, and if it was

purulent when I first saw the case it has quickly become clear as a result of the treatments. Praetorius states that instillations of 20 per cent. colloid silver at intervals of three days between the treatments hastens the separation of sloughs, and I intend to try this in future. Hexamethylene-tetramine is exhibited throughout the course.

When I first started I was inclined to carry out diathermy treatment without an anæsthetic, owing to administrative difficulties at the hospital and to the shortness of beds. Using my new machine I am nowadays inclined to give an anæsthetic anyhow at the first sitting. Using an anæsthetic I am able with my new machine to destroy completely the top of the tumour at one sitting. I can then wash away the debris and having re-filled the bladder with a clear medium I can proceed at once to give a strong treatment to the actual pedicle. In this way fewer treatments are required and the cure is quicker. Spinal anæsthesia is the ideal as far as a non-irritable bladder is concerned, but it means that the patients need to stay several days in bed afterwards; otherwise they tend to develop a bad headache. For this reason I usually employ open ether and oxygen, so that they can go home the next evening. I find by experience that an interval of at least three weeks and not more than four weeks is the best to allow between the treatments. This gives time for all sloughs to separate and yet not enough time for fresh growth to occur, and it gives the urethra time to settle down. I am aware that this is in contradistinction to the advice of Edwin Beer, who states that he carries out the treatment every seven days. After apparent cure the patient should be urged to report at least once a year for cystoscopy. A tiny early recurrence too small to give way to hæmaturia can be destroyed with ease at one sitting. At one time I tried to combine the old-fashioned snare with diathermy. I had made an insulated snare which I could attach to my diathermy machines. With this I snared the pedicle and turned on the current. The effect was to destroy the pedicle, but the top of the tumour came away in a lot of broken living pieces and there seemed to be a risk of implantation from these pieces so I gave the method up.

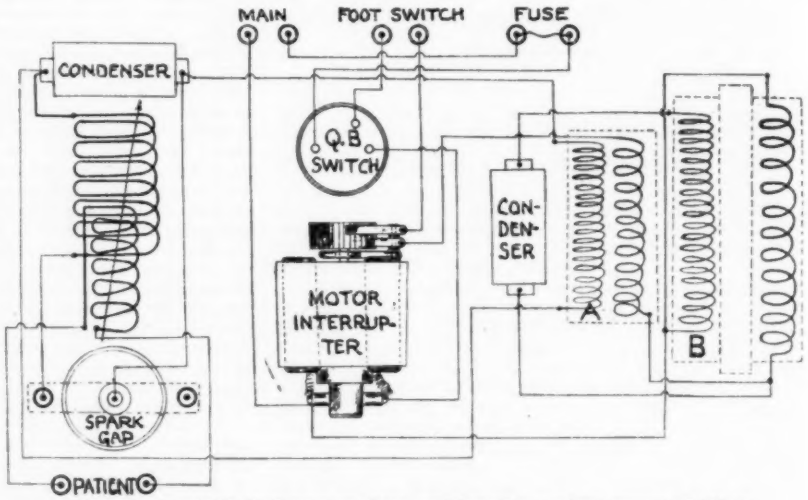


Diagram of portable diathermy machine, working off a constant current of 120 or 240 volts, and weighing 34 lb.

### GROUP 2.—INFLAMMATORY PAPILLOMA.

In this connexion I wish to bring forward two cases of inflammatory papilloma treated by the diathermy current (Cases 116 and 117). In certain patients with chronic cystitis and pyelitis due to the colon bacillus I have observed isolated buttons of hyperplastic inflammatory tissue covered with hyperplastic epithelium closely simulating epithelial tumours. These buttons are sessile and lie around the ureters and on the trigone. They are flattened or sessile and covered with corrugated epithelial tissue not so exuberant or so fimbriated as the epithelial tentacles of a papilloma. I have seen a similar papilloma when doing a post-mortem examination on a case of tuberculosis of the bladder, but so far have not encountered one in the living subject. The existence of such inflammatory nodules should not be forgotten when considering the diagnosis.

CASE 1.—Female, aged 25 in 1917. Acute appendicitis accompanied by acute pyelitis due to the colon bacillus. Appendix removed. The pyelitis became chronic and needed renal lavage for its cure. Very marked strangury, caused by the presence of a number of inflammatory papillomatous buttons scattered over the trigone. I treated them on several occasions with the diathermy current until they had completely disappeared and the symptoms were relieved.

CASE 2.—Female, aged 40 in 1919. Long-continued strangury, *B. coli*, streptococci and pus in the urine. Cystoscopy, two large inflammatory papillomatous-like buttons on the upper part of the trigone towards the right ureter, one sessile, the other having a distinct pedicle. These buttons were treated three times with diathermy and the kidneys washed out, with complete relief of the symptoms and a return of the appearance of the trigone to the normal.

I have lately discovered that Ewing refers to this subject in "Neoplastic Diseases" (W. B. Saunders Company, 1919).

"The multiple villous tumours must be distinguished from a form of diffuse low papillary inflammatory hypertrophy of epithelium, which has been known to cover almost the entire mucosa, producing a velvety surface. This condition is a curious exhibition of the regeneration tendencies of the irritated mucosa, is seen in exstrophy of the bladder, with calculus, and about other tumours, and may be arrested by curettage (Keyes, Fenwick)."

Until 1920 I was content to use the machine devised by Lowenstein of Berlin, called the "urodiatherm." I found that it was continually getting out of order owing to overheating of the spark gap, so that prolonged treatment could not be carried out at one sitting, and also no very profound effect could be exerted on the deeper tissues as the quantity of current passing was not great enough. Mr. Schranz, of the Genito-Urinary Manufacturing Company, 66, Margaret-street, London, at my suggestion worked out the design of a fresh machine. Making use of the Wilson interrupter coil (as devised for use during the war for naval wireless, and described in detail on pp. 52 and 53 of Fleming's text-book on Wireless Telegraphy) he has designed me a machine which gives excellent results. It works off a constant current of either 120 or 240 volts, and gives a minute gradation of current from 0 up to one ampère. The spark gap is of remarkable consistency and can be used continuously for 15 minutes at a time without overheating. With this machine it is possible to start each application of current at a very low ampèrage and gradually increase it up to a maximum. In this way one obtains a maximum of true "diathermy" heating and consequent coagulation of the deeper parts of the tumour without producing charring and gassing on the surface of the tumour, a most important point emphasised by E. P. Cumberbatch.[1] The machine only weighs 34 lb., is

[1] Diathermy: Its Production and Uses in Medicine and Surgery, 1921. London: Wm. Heinemann, Ltd. Reviewed in THE LANCET, 1921, i., 1306.

portable, not easily knocked out by a jar, and appears to me to be simple and efficacious. Its only defect is that it cannot so far be designed to work off an alternating current without becoming too bulky to be portable. Using this machine (see diagram) I have been able to destroy very large clinically malignant papillomata at one sitting.

### DESCRIPTION OF MACHINE.

At "make" the brushes on the motor interrupter are connected. A current rises in the inductance (B) and stores energy in its magnetic field. The condenser (C) is charged to the potential of the supply, the charging current passing through the primary windings of the spark coil (A). At "break" the brushes sever contact; the energy stored in the choking coil and condenser is now isolated. The condenser immediately discharges its energy into the choking coil and is again charged in the reverse direction by the falling magnetic field of the choking coil. At that moment the choking coil is short-circuited and the condenser discharges with greater speed through the primary of the spark coil. The energy at the terminals of the secondary is then transformed into a high-frequency current by the usual oscillatory transformer, spark gap, and condenser. The size of the case is 19 by 8 by 11¼ in., its weight 34 lb.

I feel that the profound and important distinction is not always recognised between fulguration or sparking, a process which produced superficial destruction by charring of a growth and diathermy, which produced coagulation and necrosis of the malignant cells in the pedicle and deeper portions of a tumour. This effect is obtained by heating up the deeper portions by means of the concentration in those portions of a high-frequency current sufficient to insure necrosis of the cells without giving rise to charring. If too strong a bipolar high-frequency current is turned on directly the electrode is applied to the tumour, charring takes place on the surface, the electrical resistance of the charred mass rises to a high degree, and in consequence the heating effect of the current on the deeper portions is cut off and rendered ineffective. Yet it is the deep heating effect that we ought to aim at if we wish to get quick and lasting results. We only require a moderate yet sufficient rise of temperature to produce necrosis of the tumour cells, a temperature which is well below that needed to produce charring and gassing. This effect can be attained only if we turn on a very low current at the start and work it up gradually over a period of 20 or 30 seconds until a faint whitening begins to appear in the region of the electrode. Then is the time to turn off the current. Do not remove the electrode from the tumour until the current has been turned off. Otherwise sparking and charring occur, and the electrode tends to stick to the tumour and when pulled away causes bleeding. It is to the strict observance of these points that I attribute my success in obtaining quick and lasting results—points which are clearly brought out in Cumberbatch's book. The aim is to apply a deep diathermy effect and not mere superficial fulguration.

*(To be continued.)*

### JENNY LIND HOSPITAL FOR CHILDREN, NORWICH.

The annual report of this institution states that the number of in-patients admitted during 1922 was 901. The daily average number of beds occupied was 44·3, the number of operations in hospital 339, dressings and casualties in the receiving room 612. In the out-patient department the number of new patients was 2456, the number of attendances 10,513, and 175 operations were performed. The percentage of cases stated to be "cured" (68·7) was considered gratifying; 12 per cent. were marked "relieved"; 8·76 per cent. were discharged for special reasons; the death-rate was 5·88 per cent.; and 4·66 per cent. remained in hospital at the end of the year. The ordinary income for the year was £6227, almost the same as that of 1921—viz., £6254—and the total expenditure amounted to £6782. The average daily cost per patient was 8*s.* 4*d*; the committee are satisfied that the greatest economy is exercised. It has been decided to appoint an honorary ophthalmic surgeon and a male house surgeon.

# The Milroy Lectures

[ABRIDGED]

ON

# CANNED FOODS IN RELATION TO HEALTH.

*Delivered before the Royal College of Physicians of London on Feb. 22nd, 27th, and March 1st respectively*

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## I.—THE IMPORTATION AND CONTROL OF CANNED FOODS.

WHILE available literature has been utilised, the lectures are mainly based upon four years' systematic laboratory investigation by myself and colleagues, together with many special inquiries and studies of methods in this country and in America, the work being done for the Food Investigation Board.

The introduction of the art of canning is due in large part to the stimulus of war, and, indeed, originated in the bounty of 12,000 francs offered by the French Government during the Napoleonic wars for an improved method of preserving foods. This was awarded in 1810, and commercial canning dates from 1820. The gradual development of the industry was accompanied by general improvement in methods of canning, more suitable types of tins, wide and continuous extension of the kinds of foods canned, and a more scientific understanding of the processes involved.

The importations of canned foods which are retained in Great Britain amounted in the year 1921 to over 248,000 tons, or about 278,000,000 separate tins of 2 lb., this being taken as the content of an average tin. This enormous quantity was composed of meat 22,500 tons, fish and other marine products 32,700 tons, fruit and vegetables 88,300 tons, and condensed milk 105,000 tons. In addition a considerable quantity is manufactured and consumed in this country. Most countries came under contribution, but most meat (41 per cent.) came from South America, with Australia second (30 per cent.). Japan headed the list for salmon, with U.S.A. a close second, while condensed milk and fruit were mainly from U.S.A.

The supervision exercised over canned foods comprises supervision at the source and in process of manufacture, that exercised by the trade, the control exercised at the ports of entry, and supervision after distribution. Supervision at the source was discussed mainly in relation to U.S.A. and Canada, and is complicated because of the double series of laws—those enforced by the Federal Government, and those by the individual States. Apart from meat the procedures are very similar to those in this country, but under the Meat Inspection Act of 1906, and supplementary legislation, a very comprehensive system of control is exercised. This involves veterinary and lay inspection of all carcasses, and some 2500 employees are continually engaged in this work. All animals which are satisfactory are stamped with the Federal inspector's stamp.

The control exercised at the ports of entry in this country is derived from powers in the Unsound Food Regulations, 1908. Under Article IV., if the canned food consignment is suspect in any way a notice of detention is served so that a detailed examination may be made. Article VIII. gives powers of sampling and facilities for the detailed examination of selected samples.

Another source of information which is valuable is the results of examinations of canned goods made by and for the trade. These examinations are utilised to a considerable extent, as with the present staffing it is not possible for officers of the local

authorities themselves to examine more than a small percentage of the tins which come into the area of their authority.

The reliability of the methods of detecting unsoundness from an examination of the unopened tins demands critical consideration. 431 samples of different canned foods were submitted to detailed bacteriological examination after the opinions of the food inspectors had been elicited. The results showed that in all, judgment was correct in 73 per cent. of the samples, but that this varied greatly, and for meat, which included many doubtful tins, was as low as 41 per cent. For the tins which were springy or showed an abnormal shake sound the percentage of error was very high, and many tins with sound contents were rejected.

The conditions as regards labelling are unsatisfactory. Much canned food reaches this country unlabelled, and is then given a fancy label which may be used for the same type of food but from very different sources, while the same consignment may be labelled with several different labels. This makes it impossible to trace a consignment should, for example, a food poisoning outbreak occur. A system of identification stamping is desirable.

The lecturer went on to discuss the thorny subject of dating canned goods, strongly expressing the opinion that the date of preparation should be stamped on all tins. He dealt with the loss of canned foods by the contents becoming unsound. This loss falls into groups factory loss and post-factory rejections. For the former anything over 0·5 per cent. would be considered unwarranted and demanding strict investigation. Post-factory wastage may be very considerable. Rejections from four areas in London in 1920 amounted to 1,364,272 lb. from canned meat alone, a loss of over £68,000.

The methods of destruction of these foods is not completely satisfactory, as although much is destroyed and the rest released under definite restrictions for animal food, manure, or fat extraction, the methods of supervision are not always adequately controlled, and there is a possibility that some of the best of it may be picked over and come back into circulation. A common practice is to pierce the tins before they leave the supervision of the local authority, but this is not a universal practice.

## II.—SPOILAGE OF CANNED FOODS.

The prevailing view is that canned foods remain sound because the food is rendered sterile by the application of heat and is maintained sterile by being kept in hermetically-sealed containers. This simple conception does not represent the facts. Of 178 sound samples purchased in shops, 38·8 per cent. were not sterile, excluding sweetened condensed milk which is never bacteria-free. The percentage not sterile varied from 100 for crab, 83 lobster, 64 meat to 22 for fruit. More important than absolute sterility is the types of bacteria present. These include yeasts, obligate anaerobes, sporing aerobic bacilli, thermophilic bacteria, and micrococci. The two important points in determining the potential ability of an organism to cause unsoundness in canned foods are its proteolytic and its fermentative properties. The former was judged by its ability to liquefy blood serum and digest milk, the latter by carbohydrate fermentation. Organisms such as *B. proteus* or the obligate anaerobes which usually possess both groups of properties will be the most potent causes of decomposition. Organisms which are fermentative but not proteolytic, such as the *B. coli* group, will cause tins to become "blown," but may cause surprisingly little change in the contents. Those, such as the micrococci, which usually exhibit neither property are comparatively harmless.

Each group of organisms has, however, to a certain extent to be considered in relation to the kind of food. Yeasts are potent causes of decomposition of sweetened condensed milk, to a lessened extent for unsweetened milk and fruit, and are of little or no importance as a cause of spoilage for meat and marine products. Micrococci cause some spoilage in unsweetened milk, and probably some types are of importance for fruit but otherwise cannot initiate spoilage. Anaerobic sporing bacilli can decompose any kind of food. Sporing aerobic bacilli, such as *B. subtilis*, *B. mesentericus*, are so widely distributed in all types of canned foods and in sound and unsound tins that the possibility of their acting as decomposing agents is of very great importance. They are not fermentative, but the majority are proteolytic. Detailed study shows that they are often present in the spore form in all types of canned foods, and while they usually remain dormant under certain conditions they can decompose the contents. These conditions are of great practical importance. In a striking experiment it was shown that when 17 perfectly sound shop-purchased tins of different marine products were punctured and given sterile air access, incubated for 5–16 days, and then sealed up and re-incubated, no less than 12 became quite unfit. Sporing aerobic bacilli were found in 16 (i.e., all but one), anaerobes in 9, and other organisms in 9. Four control tins, but not punctured, remained sound and sterile on examination. This and a long series of other experiments shows that very many of these sound tins contain bacilli even of decomposing type, which remain dormant until lit up to activity by air access, and that this applies even to the anaerobes. Another series of experiments demonstrated the same thing for the yeasts and showed that a few yeasts even of fermenting type may be present in sound tins of sweetened condensed milk (in 43 per cent. in one series) and cause no decomposition so long as the supply of oxygen is restricted. Once, however, they have produced sufficient enzymes gaseous fermentation will be largely independent of the oxygen supply. A new and hitherto unrecognised type of decomposing bacillus, *B. pleofructi*, as a cause of spoilage of fruit, was isolated and found to be of great practical importance.

The investigations emphasise that air access is an extremely important factor in spoilage, not because it allows bacteria to get in but because it permits of the multiplication of bacteria already there. Keeping down the initial number in the food before the tin is closed is also of much importance. The problem of "processing"—i.e., the so-called sterilisation after the tin is closed—is of great complexity, and not merely a question of a definite temperature for a given time. The destruction of the bacteria is materially affected by the physical properties of the food, the hydrogen-ion concentration, the size of the tins, the initial temperature, the subsequent cooling, and other factors. The changes which take place in foods after canning are of considerable interest. In some foods they are slight, but are considerable for milk and fish. In milk, particularly sweetened kinds, they take the form of marked thickening and darkening in colour. The changes are of considerable practical importance. The lecturer discussed these in some detail and also the considerable changes which take place in stored fish.

The possible danger to health from the consumption of canned foods which show signs of decomposition is an important question because there is a real danger that incipiently decomposed food may be canned and all living bacteria killed by subsequent sterilisation. Such food will not decompose further in the can and the tin will not show any signs of unsoundness. In spite of prolonged investigation no satisfactory methods could be devised for reliably detecting whether such slightly decomposed food had been used. Certain chemical determinations are, however, of value and are capable of improvement. Fortunately there is no evidence that the consumption of such tainted food is liable to set up disease or illness. There is no evidence of the presence of bodies poisonous by feeding, while a long series of experiments with kittens fed repeatedly upon both slightly and very putrefactive canned and other meat failed to demonstrate any definite signs of toxicity. No danger to health from this source is to be apprehended provided the specific organisms of food poisoning are absent.

### III.—CANNED FOODS IN DIRECT RELATION TO HEALTH.

Scientifically considered any possible menace to health from the use of canned foods may be bacterial, animal parasitic, chemical, or nutritional. As a vehicle for the conveyance of animal parasites they have no special significance, but the others require detailed consideration. The bacterial sources of infection are mainly specific food poisoning from the Salmonella group, botulism and the possibilities of food poisoning from the use of putrefactive food not specifically contaminated. Salmonella food poisoning is of great importance in connexion with canned foods, and I have collected particulars of 51 such outbreaks, all in Great Britain. It is certain that very many of them are never reported or known officially. The infected canned foods do not differ in appearance, odour, or taste from sound foods, nor are there any changes in the containers. They form two groups. In the one living members of the Salmonella group are present; in the other the heating given to the tins in manufacture has killed the living bacilli and left the heat-resisting toxin. Of 43 outbreaks of the series in which this could be ascertained 16 were due to living bacilli and 27 to undestroyed toxins, without living bacilli.

The influence of season is distinctly less noticeable for canned-food outbreaks than those where the vehicle is fresh food. They show only a moderately increased prevalence in the warmer months. In my series the canned-food vehicle percentages were, respectively, meat 51, fruit 10, salmon 31, other marine foods 8. In all, or practically all, these outbreaks the food was infected before the tin was sealed up. The prevention of outbreaks from this cause is, therefore, a matter of exposure of the tins to a temperature adequate to kill toxins as well as bacilli, and in part to prevention of infection of the food at the source. Since the outside of the tins and the contents show no deviations from the normal ordinary methods of inspection of the tins are powerless to assist.

In this country food poisoning from the Salmonella group is far more important than botulism. The latter has, however, a special relationship to canned foods, and the risk from this source demands detailed consideration. Outbreaks of botulism mostly occur in America, and through the kindness of Dr. Meyer, of California, who has done so much in this subject, I have particulars of 84 outbreaks in U.S.A. and Canada, all from canned or bottled foods. They comprise 319 cases with 206 deaths, a case-mortality of 64·6 per cent. Of these 52 were home and 31 commercially canned foods, 1 being doubtful. The primary seat of *B. botulinus* is the soil. It has been found widely distributed in the soil of California and more prevalent in virgin than in cultivated soil (57 to 27 per cent.). This is an important point, and suggests that animal excreta is not a vehicle, nor is the intestinal canal the natural home. Dr. Meyer found the organism in 5 (and 2 others doubtful) out of 64 samples of soil from different parts of England which I sent to him in 1921. The spores have been isolated from fruit and vegetables in California.

The Loch Maree outbreak is the only outbreak of botulism which has ever occurred in England, so far as I can trace, but the possibility of its introduction from canned fruit or vegetables demands very careful and detailed consideration. In brief, the available facts suggest that the spores of *B. botulinus* may gain access to canned foods. The toxins and bacilli are easily killed by heat, the spores are exceptionally resistant, and some are likely to survive any processing given. While most succumb to reasonable temperatures (45 minutes at 105° C.), more resistant strains are known which require six hours at 100° C. or 36 minutes at 110° C. to destroy them. The ingestion of fruit containing undeveloped spores probably does no harm, as they do not develop in the animal intestine. If, however, the conditions in the tin are such that they can multiply, they produce toxins and the whole tin is excessively poisonous. Fortunately the other products of growth are unpleasant and definite signs of spoilage are present. In exceptional cases these have not been noted. The risk is that while present they would be overlooked by the careless person, although definite enough to the expert. In the Loch Maree outbreak the wild-duck paste, from its nature, would tend to mask such changes, although probably they would have been noticeable to an expert. The risk of botulism from canned foods is a real, but an extremely small one, and with added care will be still further diminished. Tin poisoning from canned foods is a popular rather than a real danger. Apart from old stocks of foods, such as acid fruits, meat essences, and a few marine foods which dissolve tin, the amount present is always small and much of it in an insoluble form. There are few, if any, recent recorded cases of tin poisoning from this source.

It is not possible to give a simple direct answer to the question as to whether vitamins are present in canned foods, as so many factors are concerned. The whole complex of changes which are necessary in canning foods are detrimental to their content in vitamins, and these are particularly affected by the oxidation allowed and the temperatures reached in processing. The three types are not equally affected. Type A is comparatively heat-stable and there may be no material diminution in the vitamin content. The B type is more thermolabile and with any considerable application of heat is likely to be dangerously reduced or even destroyed. Vitamin C is still less resistant to heat, and it is probably safe to assume that it is absent in most canned foods.

Considering the subject broadly, we can conclude that while canned foods have definite and special risks of their own they are not large and are for the most part readily guarded against. Compared with fresh foods, canned foods are undoubtedly safer, and popular prejudice against them is not justified. Certain improvements in manufacture, distribution, care, and supervision are necessary, as has been pointed out, but these are not very considerable. No one who has studied the subject can be left in doubt as to the very great value to the community of this method of preservation.

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## TRAUMATIC INTRACRANIAL AEROCELE.[1]

BY SIR WILLIAM WHEELER, M.D. DUB., F.R.C.S. IREL.,
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A FATAL case of head injury, admitted into Mercer's Hospital on Jan. 15th last, exhibited some unusual features worthy of interest.

The patient, aged 45 years, fell from a bicycle on the right frontal region. There was a small wound above the outer side of the right eyebrow, and some ecchymosis and bruising over the entire frontal region; the right pupil was dilated; there was retention of urine; blood-stained cerebro-spinal fluid trickled from the nose. The diagnosis of fracture of the anterior fossa of the base of the skull could be predicted with certainty. He was mentally confused, but he was able to swallow and to answer questions with fair intelligence.

*Operation.*—An hour after admission his condition was less satisfactory. The skull was opened over the right frontal lobe by means of Hudson's drill and bone forceps. On incision of the dura air bubbled out in small quantities, followed by blood-stained cerebro-spinal fluid. The general blood pressure was low and the brain correspondingly retracted. The frontal lobe of the brain appeared in no way injured, but on free exposure an unusual phenomenon was observed. The patient was breathing heavily; on inspiration the frontal lobe moved upwards from the base of the skull and fell back again on expiration. This movement of the brain synchronous with respiration was well marked.

[1] A communication read at a meeting of the Pathological Section of the Royal Academy of Medicine in Ireland on March 2nd, 1923.

and rendered obscure the natural pulsation. It was obvious that air under some pressure was passing from the nose through a rent in the dura, in the neighbourhood of the cribriform plate of the ethmoid and roof of the orbit. It was difficult, however, to understand how, with the dura widely opened by the operation, the force of air was sufficient to raise the brain on each inspiration; yet the movement was very distinct and obvious to all present.

The wound was closed without drainage in order to lessen the paramount danger of infection. The absorption of the cerebro-spinal fluid flowing into the areolar scalp tissues provided, in our view, a sufficient outlet for the extravasation of blood and cerebro-spinal fluid. The nose was cleaned out with alcohol and loosely plugged with sterilised wool.

*Course of Case.*—The patient's condition improved considerably after operation. Hexamine was administered freely by the mouth, and small doses of hyoscine assisted in controlling restlessness and irritability which at times increased to a state of violence. Six days after operation the temperature rose to 102° F.; the patient became unconscious; the breathing was stertorous, and the pupils were dilated. The right pupil was still slightly larger than the left; both reacted to light, and there was a faint conjunctival reflex. 30 c.cm. of turbid fluid, containing a pure culture of pneumococci, was withdrawn by lumbar puncture by Dr. Milne Henry. During the withdrawal of the fluid the blood pressure fell from 130 to about 110, and rose again about 15 minutes afterwards. The temperature continued to rise until it reached 105°, and the patient died of meningitis on the eighth day after operation.

### *Remarks.*

Since this communication was written, a paper has appeared by Grant, of Philadelphia,[1] on Intracranial Aerocele following fracture of the skull. He states that reliable authorities have spoken of the condition as "pneumocranium," but objection is taken to this term as having no definite meaning. "Pneumocele" or "aerocele" connotes a swelling or tumour containing air; "intracranial" localises the position of this air, and, as it always follows injury, the word "traumatic" may be added with advantage. He states that trauma of the frontal region of the skull involving the sinuses, a compound comminuted fracture resulting in a tear of the dura which permits the ingress of the air, is the commonest cause of the condition; but any compound fracture with a dural tear, whether the sinuses are involved or not, may be followed by the formation of an aerocele. The air is always intradural.

Grant points out that the presence of intracranial air may not be suspected until shown by a rontgenogram. He finds ten recorded cases of the condition in recent years, and in six the aerocele developed insidiously, and was found by X rays at intervals varying from a few days to several months after injury. In some cases the injury was comparatively trivial. In our case the patient was admitted at night and operated upon within an hour of admission, so that no X ray examination was made. In Grant's case the injury appears to have been almost identical, but on the left side. In both cases the pupil was dilated on the side of injury, possibly owing to some involvement of the third cranial nerve, but more likely—in the absence of other ocular signs—to stimulation of the sympathetic, and at operation air escaped in small quantities when the dura was incised. In Grant's case subsequent X ray examinations showed no increased density due to the presence of air, and it was concluded that the rent in the dura closed spontaneously. The literature on the subject suggests that, owing to the danger of infection in these cases, the presence of aerocele immediately following injury is an indication for operation, and Grant thinks that an attempt should be made to close the dural tear. If five or six days have elapsed, and the aerocele is discovered in a photograph by accident, the sinus may have spontaneously closed and the policy of watchful waiting for absorption should be instituted. Air, per se, once the possibility of infection can be excluded, is relatively innocuous and will be ultimately absorbed. In nine of the ten cases collected by Grant injuries to the scalp were noted in the region of the eyebrow. In four no operation was performed; two of these recovered and two died—one six months after injury. Of the remaining six, four died; in one a cyst containing air the size of a hen's egg was found, and three succumbed to meningitis.

In making the diagnosis of fractured base of the skull, it is convenient to consider the signs in three classes—certain, probable, and uncertain. If cerebro-spinal fluid escapes from the nose, ear, or mouth, a fractured base is certain; in rarer cases brain matter may be extruded, which also renders the diagnosis certain, and a third certain sign may now be added—i.e., the demonstration of an aerocele by a skiagram. Of the "probable" signs, first importance should be attached to injury to the cranial nerves. The "uncertain" signs are numerous;

From a photograph showing obliteration of the sulci by the exudate. This is well marked in the neighbourhood of the Sylvian fissure. Some of the thrombosed vessels are also visible. (See post-mortem report.)

those most obvious being ecchymosis, appearing late, and often preceded by bleeding from the ear and nose or mouth. The mental condition of a patient varies to such an extent in all head injuries that it is only of diagnostic importance when considered in conjunction with the other factors.

The points of interest in the present case are: (1) The intradural presence of air; (2) the rise and fall of the frontal lobe with respiration, which was well marked, but difficult to explain; and (3) early dilatation of the pupil on the side of injury without other ocular signs, in the absence of compression and before the onset of meningitis.

In view of the high mortality from infection to the meninges in fractures of the base of the skull communicating with the external air, and notwithstanding the general trend of opinion in favour of operation, it seems questionable whether treatment along conservative lines would not be followed by better results. Prophylaxis in the form of careful attention to the orifice through which blood and cerebro-spinal fluid are escaping, and the administration of urotropine and its derivatives, will tend to prevent infection better than drainage. To search for and close the rent in the dura at the site of a basal fracture, as suggested by Grant, in many cases would be a procedure of great mechanical difficulty and danger; furthermore, intradural air, per se, as already stated, is innocuous and rapidly absorbed. The great difficulty is to be certain beforehand that no compression, laceration, or controllable hæmorrhage exists, in addition to the fracture and the subdural air.

### *Post-mortem Report*, by Dr. E. C. SMITH.

On Jan. 21st about 10 c.cm. of cerebro-spinal fluid were received for examination from the above case. The fluid was cloudy and contained a copious white sediment. Cultures were made on blood-agar. Smears of the sediment, when stained by Gram, showed numerous polymorphs. Large numbers of Gram-positive cocci in pairs were also present. On the following day (22nd) the plates showed a pure growth of pneumococci. The colonies were greenish, and some hæmolysis was visible. The cocci were bile-

[1] Surgery, Gynecology, and Obstetrics, February, 1923.

soluble. The brain was exposed by extending the operation wound and removing the calvarium.

The quantity of cerebro-spinal fluid was much greater than normal. It was distinctly turbid. The surface of the brain was covered with a purulent exudate which obliterated the sulci. The exudate was most marked anteriorly (see figure). Many of the meningeal vessels stood out prominently and felt very firm, apparently thrombosed. Direct smears were made of the exudate and stained by Gram. Numerous pus-cells and Gram-positive diplococci were present, some of the latter had well-marked capsules. When the brain was removed, a fracture, extending through the right side of the ethmoid bone and involving the sphenoid, was apparent. When a probe was passed down from the fracture it appeared at the anterior nares.

## SURGERY IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

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*(With Illustration on Special Plate.)*

JUST over 100 years ago, in the year 1822, the following remarkable sentence was written on the subject of pulmonary tuberculosis: "It has long been my opinion that, if ever this disease is cured, and it is an event of which I am by no means disposed to despair, it must be accomplished by mechanical means, or, in other words, by a surgical operation." James Carson, the writer of these words, had recognised that the obstacle to the healing of lung disease lay largely in the "elasticity and condition of extension" of the organ—as soon, he said, expect healing in a divided tendo Achilles without mechanical help! But if the lung were allowed to collapse "the diseased part would be placed in a quiescent state, receiving little or no disturbance from the movements of respiration, which would be performed solely by the other lung, and the divided surfaces would be brought into close contact by the same resilient power which before had kept them asunder. A wound or abscess in this lung would be placed in circumstances at least as favourable to the healing process as the same affections in any other part of the body." The principles which are here so clearly enunciated led, after many years, to the collapse therapy (artificial pneumothorax) which Carson urged, and also to thoracoplastic operations (de Cerenville, 1885; Quincke, 1888; Lucius Spengler, 1890) designed to the same end—namely, the collapse and immobilisation of the diseased organ. The simplicity and safety of artificial pneumothorax, and the success which has attended it, necessarily makes this the first choice in cases where collapse and immobilisation of the lung seem indicated.

### *Indications for Artificial Pneumothorax.*

At this point it may be useful roughly to state the indications for collapsing a tuberculous lung by artificial pneumothorax. It is where disease in one lung is judged to be getting, or to have got, too bad for recovery by ordinary sanatorium treatment, and where the other is judged sufficiently "good"—in a tuberculous connexion—to function alone. In all cases where collapse of a lung is indicated artificial pneumothorax will first be attempted; indeed, it may be said that in practice other surgical procedures wait upon artificial pneumothorax, and that only where this, after due trial, has failed of full attainment are other methods admissible. The only exception one is tempted to make to this general rule is where strictly localised disease demands localised collapse, and where the collapse of a whole lung seems a large price to pay for its attainment. To this we will return.

The difficulty which surgery is, in practically all cases, called on to overcome is adherent pleura, the visceral and parietal pleuræ becoming adherent to each other in very varying degrees. There are two types of adherent pleura which demand surgical interference: (1) Those where a limited number of thick, firm, rounded, fleshy adhesions, often one or two inches long, connect the two layers of pleura, often dragging out with them and into themselves portions of lung tissue; and (2) those where the two pleural layers are more or less completely fused together and no free space can be found.

### *Separation of Pleural Adhesions.*

An artificial pneumothorax is seldom entirely complete at the beginning; the pleural surfaces adhere commonly at a few points, and in some cases at many. As a rule these adhesions separate or stretch in course of time, and an efficient pneumothorax is eventually obtained. If, on the other hand, large areas of lung are closely adherent, only a partial pneumothorax, whether "effective" or not, is obtainable. Between these two conditions occur cases, uncommon in our experience, where "effective" collapse is prevented by strong, fleshy bands. When these are few and not too thick they may be successfully separated by the electro-cautery with the aid of a thoracoscope (Jacobaeus, Saugman, &c.), or divided with a tenotome (Morriston Davies). In the following case numerous strong adhesions, rendered thicker and shorter by a seroplastic pleurisy, were divided as a last resort by open operation.

CASE 1.—Female, aged 24. Advanced disease of left lung with extensive cavitation, a good deal of quiet or healed disease in right lung to X ray examination. Pneumothorax (left), May 8th, 1920, but lung held out by numerous adhesions, though surrounded by gas. These were easily seen in the X ray plate. Pneumothorax persisted in, with some stretching of adhesions, up to October, 1920, when a pleurisy occurred and was followed by rapid shortening of the adhesions and re-expansion of the lung. On May 7th, 1921, left pleural cavity opened without removing a rib through third intercostal space, and seven firm, thick adhesions divided with scissors and cautery—some of the thickness of a Fallopian tube—also a wide sheet of adhesion at apex. Pericardium also adherent and left so. Operation took 23 minutes, performed under gas and oxygen, and well borne by patient. Followed by but slight reaction, but much cough and sputum occurred as the lung collapsed. some blood-clot accumulated at base of chest, and some crepitations appeared in right interscapular region, but had gone again by May 25th. Small fillings of gas were given on the 14th (pressure raised to +5 without leakage), on the 19th to +14, 25th to +18, and by June 22nd to +30 mean. By this date (June 22nd) she appeared to have regained her strength, and her weight (8 st. 5¼ lb.) was 1¼ lb. higher than in April before the operation. Progress appeared to be maintained till mid-July, when a tuberculous abscess in the scar led to a fistulous opening into the pleural cavity, and at the same time signs of disease appeared over the right lung both back and front. Now, some 18 months after the operation, she is still living, but in poor health, with some fever present, and with an open sinus. The chance of permanent success having failed, it can at most be claimed that life has been prolonged by the operation.

Opening the pleural cavity under these conditions is a fairly severe proceeding, but the alternatives of pneumolysis and thoracoplasty would have been equally so, and would have equally threatened a breakdown of the functioning lung. It is inconceivable that all these adhesions could have been separated with cautery or tenotome. With separation by open operation, which is easily done under gas and oxygen, and without resecting any part of a rib, the danger of hæmorrhage from the cut adhesions, which is undoubtedly present in the first two (closed) methods, does not exist, for the cut ends of the adhesions can be seen, and ligatured or cauterised should any bleeding be present. It is essential,

when these adhesions are cut, to cut them as far away from the lung and as near the ribs as possible, for in the central ends of thick and fleshy adhesions there may always be small portions of infected lung tissue, which if exposed will quite possibly infect the pleural cavity.

*Stripping of Parietal Pleura from Chest Wall.*

Where adherent pleura entirely prevents the formation of a pneumothorax, surgical measures may be undertaken to collapse the lung within the bony thorax. Attempts have been made from time to time to separate adherent pleural surfaces, but these are to be condemned as difficult or impossible. Quite easily, on the other hand, can the parietal pleura be stripped from the deep fascia and ribs outside it, and thereby the lung allowed to collapse within the chest wall. The cavity thus formed must be duly filled if the lung is to remain collapsed, and here arises the problem with regard to "pneumolysis" as the operation is called. The space may be filled with a solid medium, such as sterile paraffin wax or adipose tissue, as was originally done by Tuffier, with whose name this procedure is associated, or gas (air or nitrogen) can be tried, and an extrapleural pneumothorax instituted, as has been done of recent years. We have made some trial of both methods, as the following cases testify.

*Paraffin Replacement.*

In the following cases paraffin replacement was attempted.

CASE 2.—Male, aged 29. Localised, old cavitation at right apex, with only slight activity around, but recurrent hæmoptysis; sputum, an egg-cupful daily, containing tubercle bacilli. On May 27th, 1920, under gas and oxygen, an incision was made in third intercostal space; no rib was removed, and the parietal pleura was gently stripped from the chest wall over the apex and upper third of the lung, the resulting cavity being filled with paraffin wax. The operation took 20 minutes altogether, and was followed by little temperature and reaction (a single rise to 100°), no after pain, and only slight surgical emphysema. By July 13th his weight was 3½ lb. higher than before operation, and his sputum greatly reduced. Thereafter he kept well till Sept. 10th, when a fluctuating swelling formed in the scar and was opened by his doctor; 4 oz. of serous fluid escaped, and thereafter wax began to come away. This continued up to January, 1921, when the sinus healed, and by then slight cavity signs had reappeared, though the patient kept well all through this time, and was at work. In November more paraffin was extruded. The patient continues in good health and has had no hæmoptysis since the operation. The sinus remains closed.

CASE 3.—Male, aged 30, sent to us in May, 1922, by Dr. Christopher Rolleston, with chronic disease of right lung and cavitation outside the right root at level of sixth rib behind. Left lung old and inactive (?) disease. Repeated severe hæmorrhages (up to 2 pints on one occasion) were the main complaint. Artificial pneumothorax having failed of establishment both in Dr. Rolleston's hands and in our own, on July 26th an incision was made in the third intercostal space on the right side, and without any removal of rib the parietal pleura was stripped from the endothoracic fascia over a large area, including the apex, extending well down to the root; the resulting space was packed with paraffin. The third and fourth ribs were wired together to close the opening more effectually. Considerable febrile reaction followed the operation (temp. to 101° and later to 100°), and lasted a little over two weeks; during this time patient looked ill and lost weight. No immediate increase of sputum occurred. On Sept. 15th a fluctuating swelling appeared in second space above the scar, and some serous fluid was removed with a needle and syringe, and again on one occasion since, but the wax has been retained. His present condition is pretty good, but he has had one slight hæmoptysis since the operation.

*Air Replacement.*

In the following cases air replacement was attempted.

CASE 4.—Female, aged 24. Disease of whole right lung with extensive cavitation, the left lung being a fairly good organ. Attempts at pneumothorax treatment disclosed a totally adherent pleura, and on Jan. 6th, 1921, an incision being made in the right third pleural space without any removal of rib, the parietal pleura was stripped from the endothoracic fascia over nearly the whole lung, including the entire apex; the resulting cavity was left full of air and the incision carefully closed. It was intended to refill this cavity at the end of a week, but unfortunately this period was inadvertently lengthened to 12 days, and then attempts to put in gas entirely failed, the lung having re-expanded and the space having become obliterated. Absorption of air from the raw surface seems to be rapid, and we now think a week would have been too long; refills should have been begun a couple of days after the operation. The operation appeared to stimulate fibrosis in the underlying lung, and for a time the patient appeared to improve, but this was not maintained, and the patient now has extensive and irremediable disease almost throughout both lungs.

CASE 5.—Young female, sent to us by Dr. Rolleston after two attempts, unsuccessful owing to adhesions, to induce a pneumothorax. There was very advanced disease of the left lung, with extensive cavitation near the base, and a hectic temperature. The right lung appeared sufficiently good. Under gas and oxygen the chest was opened through the third intercostal space, and the pleura stripped off the ribs for the whole of the upper three-quarters of the lung. The wound was resutured with a valvular tube in it which would let air into the chest but not let it out, the air being carefully filtered through sterile wool first. It was hoped that by this means we should be able to keep the lung collapsed. Severe surgical emphysema developed, which disappeared a few days after the tube was removed. On the eighth day 900 c.cm. of air were introduced, and, later, subsequent fillings, but the wound did not remain air-tight, the temperature kept up, and the patient got worse. She died about seven weeks after the operation; post-mortem examination disclosed active disease in both lungs and suppuration of the extrapleural cavity.

*Thoracoplasty.*

It has been rather presumed up to this point that the surgical operations designed to extend or replace a pneumothorax possess the same "indications" and "contra-indications" as does artificial pneumothorax itself. This is, however, not entirely the case even with the measures already discussed, and it becomes still less so where a thoracoplasty is concerned. The separation of adhesions and pneumolysis do indeed but aim at a lung collapse within the bony thorax, but they are more serious measures than an ordinary pneumothorax, for the following reasons: (1) Operative measures are a strain on recovery in any case of tuberculosis, and this must be taken into consideration; (2) the lung collapse, instead of being slowly brought about, is, so far as it occurs, immediate, with the result that there is more mechanical and toxic disturbance, and more risk of aspiration pneumonia or tuberculosis in the better lung or in uncollapsed portions of the bad lung; (3) the collapse is less remediable than in pneumothorax therapy, where in most cases the lung can be re-expanded (to a varying degree, it is true) at the end of treatment, or—a most important point—if trouble threatens in the other lung.

These objections, applicable to some extent to the "pneumolysis" type of treatment, hold still more decidedly in the case of thoracoplasty. Here, in particular, the third point, the irremediability of collapse, has to be especially borne in mind. An exacerbation in the other lung must here leave us helpless, and this knowledge especially forces on our recognition the main difference between the indications for these operations and those accepted for pneumothorax treatment. This difference lies in the condition of the functioning lung. For pneumothorax therapy this organ must be a good one; that it is diseased is almost a sine qua non, but the disease must not be active, or, even when quiet, severe. But in pneumothorax therapy some latitude may be allowed in this respect, on account of the fact that treatment can be abandoned at any moment and the collapsed lung allowed to re-expand; this will often allow an exacerbation in the functioning lung again to become quiescent. For operative measures, and especially for thoracoplasty, from which there is no return, the condition of the better lung must be much more meticulously examined, and the operation rejected in some cases where a pneumothorax might reasonably be attempted. Great experience, particularly "pneumothorax" experience,

is needed in this decision, and good radiograms are essential for the purpose. Many continental authorities are of opinion that no cases of rapid spreading or caseous tuberculosis should be submitted to thoracoplasty; they consider that evidence of a healing tendency as shown by lung retraction must be present, and prefer the operation especially for old cavity cases with fibrosis. This is probably to limit its application too severely; each case must be considered on its merits, with due recognition of the fact that it is often a question of giving a chance of life in a case with an otherwise hopeless outlook.

As to the amount of lung collapse achieved by thoracoplasty, Brauer has put it, at highest, at three-quarters of the collapse obtained by an artificial pneumothorax. But Dumarest considers that the apex of the lung is always less collapsed than this. Thus thoracoplasty may be said to correspond in value to a good partial pneumothorax, less the operation shock and the mutilation, which last is much slighter than might be expected. To be weighed against these are the facts that the patient avoids pleural complications and the trouble of refills. The results may be, and often are, excellent, though in some cases the collapse may prove insufficient, and after an interval of arrest disease may again break out and spread. Of 381 thoracoplasties performed by Sauerbruck, 134, or 35 per cent., are claimed as "cures"; the post-operative mortality amounted to 2 per cent. (mostly in the Brauer-Friedrick operation, which was performed in 71 of Sauerbruck's cases); 12 per cent. died during the first three weeks from aspiration pneumonia and tuberculosis of the better lung. When it is remembered that the material selected for thoracoplasty consists of cases severe and otherwise generally hopeless, it must be admitted that these results are very decidedly encouraging.

The operative measures covered by the term thoracoplasty are many and various, and may be shortly classified as follows:—

1. *The Brauer-Friedrick Operation.*—Through a paravertebral incision carried round the base and up the front, large amounts of the first ten ribs are removed, rising to 10–25 cm. of the lower ribs. This operation is very severe and has been followed by a higher immediate mortality than the others.

2. *Sauerbruck's Operation.*—Paravertebral resection of all the ribs with removal of 6 or 8 cm. of each rib close up to the spine. The technique of Saugman is closely similar. Both operators work under local anæsthesia.

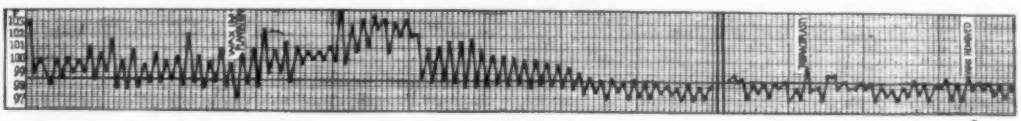
3. *Wilms' Operation.*—Removal of pieces of eight upper ribs behind, and three or four weeks later a similar removal in front.

4. *Partial Thoracoplasty.*—From the fourth rib down, as was originally done by Sauerbruck; or the upper part anteriorly, the first to fifth ribs, as used by Sauerbruck if activity remains at the apex after his paravertebral operation.

Thoracoplasty, however performed, is the more severe, producing more shock, reaction, mutilation, and deformity than does a stripping of the lung with paraffin displacement, for this latter is easily performed in 25 minutes between two ribs without excising any bone at all. Nevertheless, severe cases of phthisis appear to withstand the shock of an extensive thoracoplasty remarkably well, and we have come to the conclusion that thoracoplasty is on the whole a better operation than paraffin implantation. Paraffin wax is apt to give trouble, tending to extrude itself through the wound some months after operation. This extrusion is generally heralded by the appearance of serous fluid under the skin at this spot, and if this is aspirated through a fine needle the danger may be averted; if wax comes away, the wound, nevertheless, ultimately heals quite satisfactorily. In thoracoplasty this source of trouble is avoided; moreover, its ultimate results should prove better than those of pneumolysis, for though a wax implantation within the ribs may produce efficient collapse and compression, it does not limit the mobility of the hemithorax as does extensive removal of the overlying ribs.

In the cases we have treated hitherto, thoracoplasty has been performed on the lines of Saugman's operation, large portions of the ribs being removed from behind through a single J-shaped incision, always including a portion of the first rib, and usually going right down to the ninth or tenth ribs; this allows of an extensive falling in of the scapula and chest wall, with corresponding collapse and immobilisation of the lung. Saugman lays stress upon the necessity of performing the operation with a local anæsthetic, and in many cases of doing it in two stages. Neither of these have been thought necessary or advisable in our cases. The question as to what is the best anæsthetic to give in phthisical cases has often been discussed; we have come to the conclusion that, although theoretically local anæsthesia is preferable, in practice gas and oxygen, without any ether or chloroform, is just as safe and very much more pleasant for both patient and surgeon. We have been fortunate in having the assistance of Dr. L. W. Shelley to give the anæsthetic in these cases, all of which have been done under gas and oxygen, and in no instance has the anæsthetic caused any anxiety.

We have not, so far, performed the operation in two stages, though in every case we have been quite prepared to do so if necessary, but the patients have stood the procedure of extensive rib resection so remarkably well that it has in every case been possible to complete the operation in one sitting, usually in about 35 to 40 minutes. The operation of section of the phrenic nerve in the neck to produce paralysis of the diaphragm and thereby induce collapse of the base of the lung, has, of course, frequently been performed, as a rule without very much success, but in three cases we have performed it as a supplementary procedure after thoracoplasty. It probably diminishes respiratory movement at the apex as well as at the base (Keith). It is in itself a trifling procedure, by means of which not only may the collapse be made more complete, but it may not be necessary to remove quite so many of the lower ribs.



Temperature chart of Case 6, showing times of wax implantation, thoracoplasty, and removal of wax.

5. *Combined Thoracoplasty and Pneumothorax.*—Here an adherent apex with a pneumothorax below is collapsed by removal of portions of the upper five to seven ribs.

6. *Thoracoplasty Combined with Section of the Phrenic Nerve.*

We have considered carefully the relative merits and demerits of the two operations of thoracoplasty and pneumolysis with paraffin packing; they are procedures similar in some ways, in that they are both elaborate operations and both aimed at collapsing the lung, and yet totally dissimilar in other respects.

CASE 6.—Female, aged 22, had a pneumothorax started in a provincial town in September, 1919, for acute tuberculous disease of left lung; this was continued with most successful results for two years. At the end of this time, however, the lung inadvertently expanded and became attached to the chest wall, and the pneumothorax was

unfortunately abandoned. In a couple of months fever and other symptoms returned, and she was sent to one of us to try to re-establish the pneumothorax. This failed, and since under complete rest the fever only increased, signs of disease spread, and she was rapidly losing ground, on April 27th, under gas and oxygen, the parietal pleura was stripped over the upper half of the left lung, through the third intercostal space without removal of rib, and the resulting space packed with paraffin. Unfortunately the cavity suppurated, and wax soon began to extrude through two openings. The temperature remained high for nearly six weeks, at the end of which time it fell to normal; sputum fell, after a temporary increase, from 1 oz. to 1 drachm, and she started to gain weight rapidly, though the cavity still suppurated (*Staphylococcus albus* was cultured), and the wax continued to extrude. Finally, as the wax was being lost rapidly and symptoms of tuberculous toxæmia began to return, it was decided to do a thoracoplasty while the patient's condition was still favourable, her weight having risen 8 lb. since the first operation. This was done under local anæsthesia, followed by gas and oxygen, on August 26th through a paravertebral J-shaped incision, portions of first to tenth ribs, inclusive, being removed without any opening being made into the anterior suppurating cavity. The operation was followed by practically no reaction, and the wound healed by first intention. Soon afterwards the remaining wax was removed, and with no further expansion of the lung the cavity quickly contracted from falling in of the chest wall. At present she has a normal temperature, a trace or less of sputum, gains weight, is up some hours daily, and looks fat and well. The sinus is now a shallow opening, which the skin is rapidly covering. Her temperature chart is here given.

CASE 7.—Female, aged 24, sent to us in August, 1922, by Dr. Christopher Rolleston, with active and spreading disease of left lung and failure to produce pneumothorax. A further attempt by us also disclosed adherent pleura, and complete rest produced no effect on the continuous fever. A radiogram showed rather ominous mottling round the right hilum as well as active disease in left. In view of the otherwise bad prognosis it was decided to do a thoracoplasty, and this was carried out on Oct. 3rd under gas and oxygen, portions of first to ninth ribs being removed through a paravertebral J-shaped incision. In all 24 inches of rib were taken away, the operation lasting 45 minutes from start to finish, and being well borne by the patient. It was followed by but moderate dyspnœa and discomfort, but a considerable reaction, the temperature rising to 102°–103°F., and falling, practically, by crisis on the ninth day. Thereafter it remained normal for nearly two weeks, and the patient looked, felt, and ate better. After this the temperature began to rise to 99°, and later to 100°, and the patient felt tired and not so well. A certain amount of air-entry was found at the base of the collapsed lung, and with a view to stopping this the phrenic nerve was cut in the neck under a local anæsthetic on Dec. 13th. The lung base has now collapsed completely. The X ray photograph reproduced (see special plate) shows the condition of this patient's chest after the operation. The operation of cutting the phrenic nerve is a trifling one, and it is possible that in many cases it might be wise to combine the thoracoplasty with a phrenicotomy.

CASE 8.—Female, aged 38, treated for pulmonary tuberculosis at intervals since 1917. Chronic disease with cavitation in left lung; right lung arrested disease. Troublesome febrile periods and "congestive attacks." Pneumothorax treatment (by Dr. J. M. Johnston, of Tor-na-Dee Sanatorium, Aberdeenshire) failed owing to adherent pleura. On Nov. 28th, 1922, under gas and oxygen, portions of the first nine ribs on the left side were removed through a paravertebral incision, about 39½ inches of rib altogether, including 1½ inches of first rib. The operation lasted 35 minutes and was well sustained. This patient had remarkably little reaction. Before operation she had had periodic rises of temperature about every three weeks, but since the third day after operation there has been no rise of temperature at all. The chest has fallen in considerably, and there is very little air-entry on the diseased side; at present she looks and feels remarkably well.

*Conclusions.*

In summing up the experience gained by the treatment of the foregoing cases, and by a consideration of the whole problem of surgical assistance in pulmonary tuberculosis, we are led to the following conclusions:—

1. Chest operations rapidly and skilfully carried out under gas and oxygen are remarkably well tolerated by tuberculous patients, much better than preconceived ideas would have suggested. We incline decidedly to gas and oxygen in preference to local anæsthesia.

2. We are in favour, so far as possible, of extrapleural operations, in preference to the intrapleural division of multiple adhesions.

3. Of extrapleural operations the stripping of parietal pleura from the deep fascia (pneumolysis) is the simplest and shortest, provided a suitable medium could be discovered for filling the space. It has the advantage that localised collapse can be applied to localised disease, without the necessity of complete lung collapse.

4. Pneumolysis is undoubtedly accompanied by real risk of sepsis, and Tuffier, its originator, was concerned to devise special measures for its avoidance. The establishment of an extrapleural pneumothorax is somewhat difficult and not without risk; adipose tissue, as a filling, is difficult to obtain; paraffin is apt to be returned. This latter accident is probably avoided, in threatening cases, by the aspiration of serous fluid, which tends to be formed and to collect round the paraffin in these cases.

5. The efficacy of paraffin replacements is probably reduced by the fact that no such immobilisation of the collapsed area occurs as after extensive rib resection. Furthermore, the localisation of the collapse is also, probably, less than might be hoped for.

6. For the majority of cases in which operative measures are needed for the collapse and immobilisation of an adherent tuberculous lung, a well-devised thoracoplasty seems to us to offer the best results. The operation is less severe, in skilful hands, than might be expected, and the conditions obtained are very favourable for the arrest of pulmonary tuberculosis. The better lung must be scrupulously investigated, and the best moment chosen for the operation. A reactivation on the side of operation may be met by further resection of ribs (see No. 4 in list of classified thoracoplasties), but an extension of disease in the functioning lung admits of no alleviation. This operation, if indications and contra-indications are strictly followed, is likely to gain a wider acceptance in coming years.

## A CASE OF SYPHILIS OF THE MEDIASTINUM.

BY HAROLD F. RENTON, M.D., B.S. LOND., M.R.C.S. ENG.

(*With Illustration on Special Plate.*)

IN order to give a complete and concise account of the following case the personal history over a period of five years has been submitted.

*First Period of Observation.*—In February, 1917, I was called in to see a young woman, aged 18 years, who was said to be suffering from rheumatism. Examination showed both knees to be swollen. These were not inflamed, and were quite painless. There was no temperature and no sore throat, and no evidence of rheumatic fever. Generally distributed about the abdomen and the anterior aspect of the arms and legs there was a macular rash, brown in colour, and typically syphilitic. The patient was given generous doses of mercury, and the whole condition cleared up.

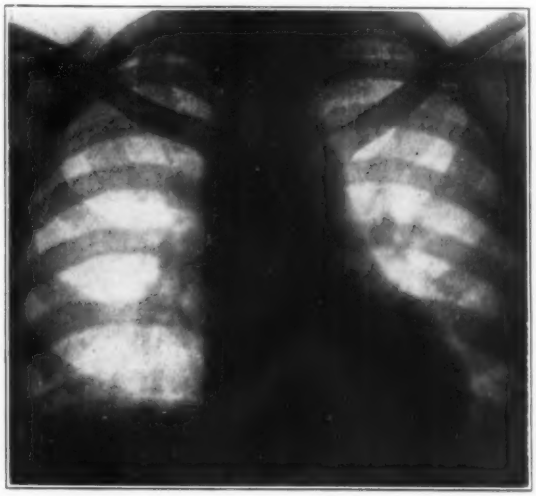
*Second Period of Observation.*—Early in 1919 the patient, now married, gave birth to a healthy, full-term child, but in 1920, at the beginning of the year, another child was born. This one was covered with pemphigus, and presented all the appearances of congenital syphilis. Despite treatment the child died. In the same year the patient came for advice, complaining of sore throat and difficulty in swallowing. Examination revealed the presence of a typical gummatous ulcer on the posterior pharyngeal wall. This was as large as a shilling and covered with a grey slough. Large doses of iodide of potassium with mercury were administered with excellent results, and once again the patient recovered. It should be noted here that, as is so common in similar cases, the patient ceased her treatment as soon as she began to feel better.

*Third Period of Observation.*—In August, 1921, the patient noticed that her left eye was swollen; the left upper eyelid had dropped, and that she could not raise it. She also

DR. CLIVE RIVIERE AND MR. W. H. C. ROMANIS: SURGERY IN TREATMENT OF PULMONARY TUBERCULOSIS.

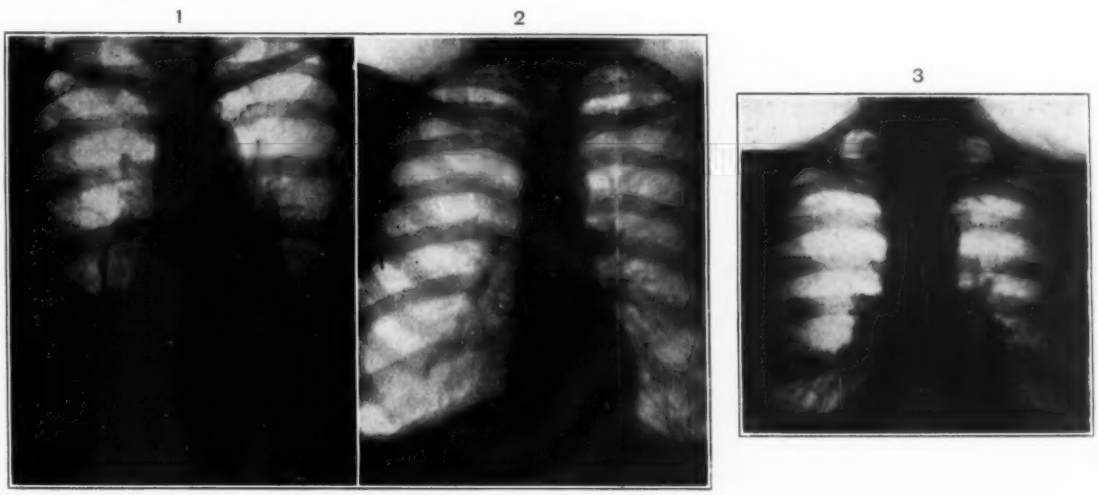
X ray photograph of Case 7 after operation.

DR. H. F. RENTON: SYPHILIS OF THE MEDIASTINUM.

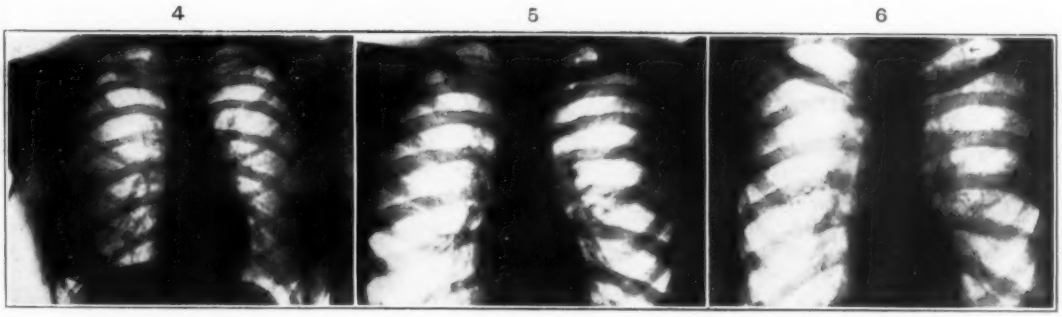


Note widening of root of aorta, mottling and striation at roots of lungs, and dullness of post-sternal shadow.

DR. BERNARD HUDSON AND MR. P. G. SUTTON: X RAY EXAMINATION OF THE CHEST.




Three radiograms of chests of normal persons.




Figs. 4 and 5 show more reason for diagnosing hilus tubercle. Fig. 6 shows how a radiogram will sometimes bring forward unsuspected lesions in the lung.

7 8 9

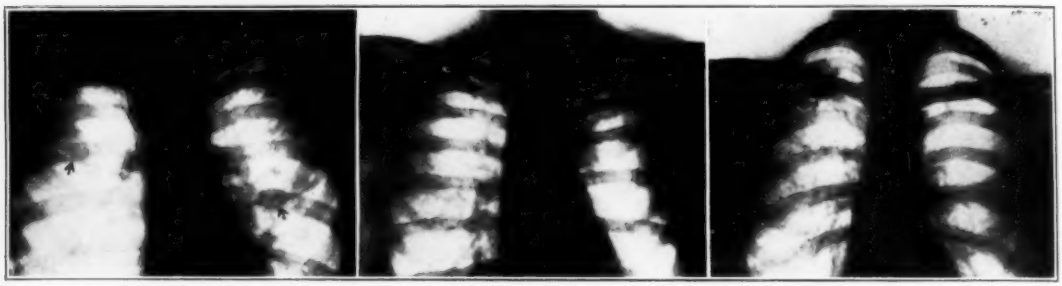


Fig. 7, like Fig. 6, shows unsuspected lesions, indicated by arrows. Fig. 8 shows scattered tuberculosis over upper lobe of both lungs. Fig. 9 shows an old fibrotic patch in the left lung, healed soundly after a year or two of treatment.

10 11 12

Fig. 10 shows the appearance of a patient's chest on arrival in Switzerland in June, 1922, and Fig. 11 the appearance in the following November. Fig. 12 illustrates a remarkable case of displacement to the left of heart and mediastinum.

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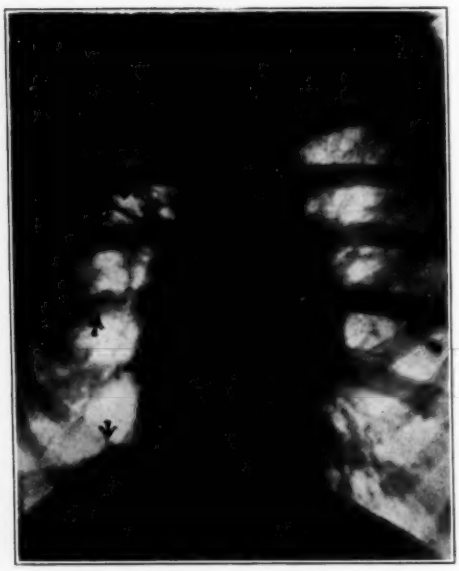

Scattered tuberculosis in both lungs. The arrows show in descending order: (1) Fibrous band; (2) cavity; (3) adhesion of diaphragm.

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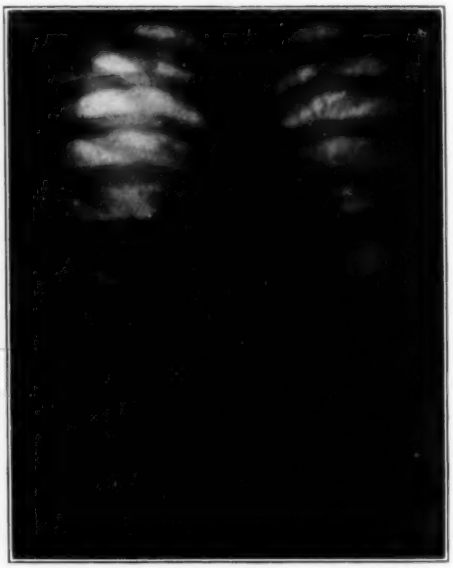

A case showing no evidence of tuberculous disease, but revealing fixation of the diaphragm as a result of pleurisy.

began to suffer from pains down the left arm. These began in the shoulder, and extended down the arm, with tingling in the two middle fingers. In the middle of September the voice became husky, but there was no cough. The patient said that she dare not cough because of pain in the throat. She had lost some weight, and complained of pain in the chest, which she thought was due to indigestion. She noticed that her food passed so far down her gullet and then seemed to stop, afterwards moving on with a great "belch" of wind.

*Condition on Examination.*—Eyes: Left palpebral fissure much narrower than the right. Marked ptosis and loss of power of left upper lid; left eye movements good, but adduction rather feeble; both pupils react to light and accommodation, and both fundi normal. Arm: No wasting, left hand rather cold, but all movements good; left pulse very feeble, almost impalpable and markedly delayed. Chest: Some dilated veins over left chest in front, stretching outwards and downwards towards the left shoulder; no pulsation, obvious or palpable, and no thrill; marked dullness of the front of the chest, commencing at the level of the second right costal cartilage, extending downwards to the fourth costal cartilage of the same side, sharply defined to the right by the sternal margin, and extended outwards across the sternum to the left side for a distance of two inches from the midsternal line; above, this area was bounded by a line joining the second right and third left costal cartilages, and below by a line joining the fourth right costal cartilage and the apex beat; there was no dullness elsewhere, and no adventitious sounds. Heart: Not enlarged and not dislocated; there were no murmurs, but the sounds were rather "tic-tac" in character. Larynx: Showed paralysis of the left vocal cord. There was no tracheal tugging, and no enlarged glands were to be felt above the clavicle or in the axillæ. Sputum examination, made on several occasions, showed no tubercle bacilli. Blood examination gave a positive Wassermann reaction in very free dilution. X ray examination revealed distinct widening of the root of the aorta, suggesting some early dilatation, probably the result of syphilitic aortitis. Very marked mottling and fibrous striation at the roots of the lungs could also be seen. The remainder of the lungs appeared clear and filled well on deep breathing. Post-sternal shadow was rather dense.

*Progress of Case.*—Very large doses of iodide of potassium and mercury were administered and mercurial inunction performed, and the eye disturbances completely cleared up. There was also marked improvement for a while in the dysphagia and in the voice. The improvement, however, was not sustained, and after a while the patient was compelled to take to her bed. Administration of salvarsan was offered and refused. Dysphagia became steadily worse, and soon the patient could not swallow at all. Dyspnœa and stridor now appeared. With this the left chest showed signs of deficient aeration, though the percussion note remained good (pressure on left bronchus). Later, wet signs developed on the left side, and the patient began to spit most foul-smelling phlegm, which was occasionally streaked with blood. This was attributed to early bronchiectatic change. The right chest, which hitherto had remained clear, now showed evidence of passive congestion, and with the onset of wasting and drenching sweats, the patient sank rapidly and died on Jan. 7th, 1922.

### *Diagnosis and Remarks.*

When the patient came again under observation in August, 1921, her symptoms and the physical signs discovered in her chest were almost diagnostic of aneurysm of the arch of the aorta, and only the patient's age and sex of the individual and the extent of the mischief prevented such a diagnosis being made. The possibility of the presence of a mediastinal sarcoma was considered, but there was no displacement of viscera, and no obvious wasting until late in the disease. Moreover, there was marked improvement in the symptoms under antisyphilitic treatment, an improvement which could not be explained by the frequent temporary arrest of malignant growth under the exposition of iodide of potassium. That the patient was suffering from a very malignant form of syphilis there was no doubt, and whilst the possible presence of a sarcoma was admitted, a diagnosis of syphilis of the mediastinum would seem to be correct. Mr. Harold Collinson, of Leeds, who examined the case in consultation with me, concurred in the opinion formed. He also pointed out the undoubted widening of the root of the aorta, as shown by the X ray photograph. (See special plate.) Unfortunately a post-mortem examination could not be obtained.

# X RAY EXAMINATION OF THE CHEST.

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AND

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(*With Illustrations on Special Plate.*)

IN this article we shall direct attention to some practical points concerning X ray examination of the chest, with special reference to pulmonary tuberculosis. Our remarks are based upon experience gained in the English Sanatorium at Montana, Switzerland, during recent years.

First we will consider the X ray appearances as seen in the normal chest. This is a highly important subject, and anyone who is hoping to become expert in the interpretation of chest radiograms must first of all be thoroughly familiar with the appearances seen in the chest where there is no reason to suspect any pathological condition. The normal chest under the fluorescent screen shows two upright clear areas (which light up further on inspiration), divided longitudinally by the mediastinal shadow. On each side of this, at the root, will be seen the hila with their branch-like markings; as will be explained later, these vary considerably, and should receive careful consideration. The diaphragm is marked by two dome-like shadows at the base, the right being slightly higher than the left. These two shadows fall and rise rhythmically on inspiration and expiration. The normal lung tissue will often show a faint mottling, and it requires an experienced eye to distinguish between this normal condition and the pathological mottling due to small tubercles.

### *Value of X Ray Examination in Detection of Pulmonary Tuberculosis.*

It is frequently said, and almost universally admitted, that tuberculosis of the lungs which cannot be discovered by careful clinical methods will not be discovered by X ray examination, either fluoroscopic or radiographic. This seems to us a very sweeping assertion; personally we have come across many cases where physical signs in the chest were entirely absent on clinical examination, and where the disease was simply suspected, owing to the individual's symptoms and general condition—cases showing, on adequate X ray examination, plain signs of tuberculosis, such as, for instance, glands and masses of infiltration around the hila, which could not be made out with any degree of certainty by clinical examination.

For instance, in a man, aged 30, under observation here at the present time, there are no physical signs of any kind to be made out, nor is there fever, cough, or sputum. The only symptom of the disease has been a loss of physical energy and of weight, yet when a radiograph (see Fig. 6) of this case was taken a cavity was clearly to be seen in the upper lobe of the left lung, very plainly circumscribed by a thin wall of fibrous tissue, but with no infiltration or solidification around it. We could cite other similar cases, and therefore we have come to the conclusion, after very wide experience in radioscopy and radiography of the chest, that although the disease, if determinable by the X rays, is very often easily to be discovered by clinical means also, there are yet certain cases of tuberculosis of the lungs which without the help of careful and routine X ray examination might easily be missed, until the disease has spread to such an extent as to render a satisfactory result from treatment very much more doubtful.

Even in cases where there is no doubt of the presence of a tuberculous lesion, and where the physical signs and symptoms are quite obvious, routine

examination by the X rays may be of the very greatest value, and should be carried out in all cases. Radioscopy and radiography, in conjunction with a thorough clinical examination, will give a much more comprehensive and complete idea of the case than is possible from physical examination alone. By radioscopy can be observed the degree of expansion of the lung, the displacement (if any) of the heart, the range of movement of the diaphragm on each side, and whether that movement is free, hampered, or absent, the presence of pleural adhesions, costal or diaphragmatic, and the presence or absence of fluid. By radiography movements cannot, of course, be observed, but a more detailed picture of the actual state and extent of the lesion in the chest is given by radiography than by radioscopy alone; a very recent tuberculous lesion throws little, if any, shadow on the X ray plate, and the shadow thrown deepens with the age of the lesion and with the amount of fibrotic transformation it has undergone; thus an idea of the age, localisation, &c., of the various patches can be formed.

One of the principal uses of the X rays in pulmonary tuberculosis is when deciding as to whether or not a case is likely to benefit by artificial pneumothorax. Information is gained as to the site where puncture would probably be most successful, and as to the presence or absence of adhesions. A radiogram is also, in our opinion, absolutely necessary in order to determine whether or not the other lung is free from disease, or at any rate in such good condition that artificial pneumothorax may be reasonably attempted on the diseased side. In the after control of pneumothorax cases also radioscopy is of the greatest value: one is enabled by this means to estimate the shape and size of the cavity, whether adhesions are present, the degree of collapse of the lung, and the presence or absence of fluid. In our opinion, in every case of artificial pneumothorax regular X ray observation is imperative.

*Technique.*

A few practical details as to technique may here be mentioned.

*Radioscopy.*—Although radioscopy is one of the most important aids to diagnosis of pulmonary tuberculosis, it should always be confirmed by a radiogram, as the X ray plate is more sensitive than the fluorescent screen; it should always be borne in mind that the hard ray necessary for radioscopy will often penetrate a small early tuberculous focus, and throw no shadow of it on to the screen, but when a subsequent radiogram is taken, employing a softer ray, one finds these foci clearly marked on the plate. Of the two positions for radioscopy, recumbent and upright, the latter is undoubtedly the best, as it allows easy manipulation of the patient, and the centring of the tube is much more rapidly carried out than in the case of operating with the tube box beneath the couch. It is perhaps worth mentioning that we have found the costly and elaborate upright screening stand really unnecessary both for radioscopy and radiography of the chest. A simple piece of apparatus used by us, and which can be made in the workshop at the cost of a few shillings, consists of a wooden screen of the same thickness as the X ray couch top, and can be either hinged to one end of the couch so that it can be swung up into position when required or placed in sockets; the tube stand is then moved up close to the screen and the tube box rotated for the upright position.

*Radiography.*—For the reasons mentioned before, it is important that a soft tube be used in radiography of the chest. Many radiographers seem to forget that the radiogram showing plenty of bone detail, although very pleasing as a picture, is absolutely worthless from a diagnostic point of view, as it is not bones but lung which one wishes to see. Therefore the tube should not back up more than a four-inch spark-gap, between points, if a radiogram of diagnostic value is to be obtained. In radiography of the chest the exposure should be extremely short, for the slightest movement of the lung will absolutely ruin a radiogram; and with phthisical subjects, as it is an extremely difficult matter for them to hold their breath for any length of time, it is important that the exposure does not exceed two seconds at the outside.

*Descriptions of Radiograms.*

In order to point out the great value of X ray examination in pulmonary disease, a series of radiograms has been chosen to illustrate various interesting points in this connexion.

Figs. 1, 2, and 3 are all radiograms taken of chests of completely normal persons, who have never had any sign or symptom of disease. Fig. 1 is of a lady of 40 years of age; Fig. 2 of a young man, aged 22; and Fig. 3 of a man, aged 28. What we wish to point out in publishing these three radiograms—and the greatest care has been taken to secure good radiograms of healthy individuals—is to show how very clearly and prominently the hilus of the lung stands out. There is a great tendency on the part of many to diagnose hilum tubercle on appearances such as these; the greatest care must be taken concerning such a diagnosis, especially in the absence of very clear symptoms; it is not right to diagnose tuberculosis on appearances such as these, as it is quite possible by so doing to convert a reasonably healthy person into a neurasthenic, and spoil his whole life. Another point to notice is that in a well-taken radiogram there is considerable mottling to be seen in the normal lung, and this has to be carefully distinguished from the mottling due to the presence of small tubercles. Mottling is in itself not necessarily a sign of tuberculosis.

In Figs. 4 and 5 there is more reason for diagnosing hilum tubercle. It will be seen in these examples that the striæ tend to spread upwards and outwards, and are rather more extensive, and are more defined. Fig. 4 is a radiogram of a girl, aged 17, who was delicate and backward, and had had tuberculous glands of the neck; she has now spent two seasons in the Alps, undergoing a course of heliotherapy, with the result that she is now, as far as can be seen, a strong, healthy, well-developed girl. Fig. 5 is taken from a very similar case of a youth, aged 19, who has also, after two years in the mountains, completely regained physique and strength.

Figs. 6 and 7 are given as instances in which a radiogram will sometimes bring forward unsuspected lesions in the lung. Fig. 6 is a radiogram of a man, aged 30, in whom tuberculosis was suspected owing to loss of weight, fatigue, &c., but in whom nothing definite was ever made out. There has been, at any rate recently, no cough or sputum, no fever, and none of the classical signs and symptoms of pulmonary tubercle, except loss of weight and debility; physical signs are conspicuous by their absence, and yet it will be seen from the radiogram that there is a well-marked circular cavity at the apex of the left lung, which makes the diagnosis perfectly simple and straightforward, and permits of much more satisfactory advice than could be given without this knowledge. This patient is rapidly gaining strength and weight, and to all intents and purposes is now a perfectly normal man. Fig. 7 is a slightly different type of case, but none the less interesting. This patient has a very definite and easily detected lesion over the right upper lobe, probably of some two years' standing. A year ago he had a breakdown accompanied by hæmoptysis and fever, and was in bed for some weeks. He recovered, and since then has gone ahead rapidly; he has regained his health and strength, and except for a little morning sputum, which generally contains a few tubercle bacilli, has no inconvenience from the disease. The physical signs are the same as before—i.e., well-marked classical signs of old trouble over the right upper lobe. In spite of most careful examination, one is unable to elicit definite evidences of trouble elsewhere in the chest, but on radiographic examination it is seen that there is a well-marked cavity in the middle part of the right lung, and also a definite patch in the lower part of the left lung. These were not present previous to the breakdown a year ago, as seen by comparing radiograms taken then with the present one; and this information, again, is of great value in dealing with the case.

Fig. 8 is an example of scattered tuberculosis over the upper lobe of both lungs; in this case the disease is of the superficial type of fairly recent origin, and does not throw a very deep shadow. The older the foci and the more fibrotic they become the more dense are the shadows in the radiogram.

Fig. 9 shows this very well. Here is a case of some 15 years' standing, known to us from its start. There was a localised focus in the upper lobe of the left lung, which healed soundly after a year or two's treatment, and this patient has been working in London ever since without a breakdown. The localisation and extreme denseness of his old fibrotic patch are well seen in this radiogram.

Figs. 10 and 11 are given as an example of a pleural case, and the X ray appearances seen in such a type. This patient's history is that in the spring of 1922 he had an attack of pleurisy, with an accumulation of serous fluid. He was confined to bed for a considerable time, and became much emaciated and debilitated. Although tuberculosis was strongly suspected, it was never definitely determined. He was sent to Switzerland in June, 1922, and Fig. 10 shows the X ray appearance on arrival. Fig. 11 is a radiogram taken in November, 1922, and the striking difference is well seen.

Fig. 12 is a radiogram of a somewhat remarkable case, showing the extreme distortion which can be produced by the contracting of fibrous tissue. The patient is a man, aged 29, who acquired tuberculosis two years ago. The disease was situated over the middle portion of the left lung, and was of a very severe type. For a long time he was extremely ill, with much fever, and all the classical signs and symptoms of a breaking-down tuberculous focus; there were also recurring attacks of pleurisy in the neighbourhood of this lesion. However, the patient turned the corner, the whole thing settled down, and fibrosis set in. We have now had the opportunity of observing this patient for over a year, and have, with great interest, watched the effect of the contraction of the fibrous tissue. It will be seen that the heart and the mediastinum have been displaced considerably towards the left; the heart has also been pulled up into a horizontal position, the spleen is left uncovered; and the vertebræ are seen very plainly in the centre of the radiogram. We may add that this patient's general condition is exceedingly good, although, of course, he is somewhat short of breath on exertion, owing to the hampered and fixed state of his heart.

Fig. 13 is a case of scattered tuberculosis in both lungs, in a man, aged 28, which has undergone a healing and fibrotic change. There is well seen an adhesion of the diaphragm, pulling it up in one place into a little spike; a fibrous band, marked with an arrow on the radiogram, is also well shown. This case is also interesting as it shows the presence of an oval cavity, on the right side, quite undiscoverable by ordinary clinical methods.

Fig. 14 is taken from a lady, 24 years old, who recently had an attack of dry pleurisy at the base of the right lung. There is no evidence of tuberculous disease, either by clinical or X ray examination, in any part of the lungs, although the most careful investigations have been made. There is no cough, sputum, fever, or any other symptom, but the effect of the pleurisy upon the right diaphragm is clearly seen. On radioscopy the diaphragm is seen to be almost straight, the diaphragmatic angle has disappeared, and the diaphragm itself is fixed, does not move on respiration, and is considerably higher than normal. This appearance is also seen in the radiogram.

*Summary.*

The following are some of the more important conclusions to which we have come regarding the question of X ray examination of the chest.

1. An inexpert opinion on a radiogram is valueless and often misleading.

2. A good radiogram of a normal chest shows distinct mottling and hilum shadows which need not be referable to tuberculosis.

3. A radiogram may sometimes demonstrate much more extensive disease than physical signs reveal, and may sometimes be the sole means by which a diagnosis can be made.

4. Radioscopy and radiography are essential before undertaking and during the continuance of artificial pneumothorax.

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LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society will be held at 4.30 P.M. on March 20th at St. John's Hospital, 49, Leicester-square, W.C. 2, when Dr. Robert Craik will communicate Some Observations on the Pathogenic Yeasts.

MORE SMALL-POX AND PRECAUTIONS.—A fresh case of small-pox was reported at Nelson, Lancashire, on March 5th. This patient had been in direct relation with members of a local institute and members of a football team a fortnight ago. On the following day three fresh cases—school-children—were notified. The children live in different parts of the town and do not attend the same school. In one other case in a man, making five new cases in a fortnight, is reported. Nelson has a large number of unvaccinated inhabitants; during the week ending on the 5th no less than 600 persons were vaccinated, whilst 16 cases were reported to be in the Taplow Isolation Hospital. One case has been admitted to the Ainsworth Isolation Hospital at Radcliffe.

# Medical Societies.

## ROYAL SOCIETY OF MEDICINE.

### SECTION OF ORTHOPÆDICS.

A MEETING of this section was held on March 6th, Mr. T. H. OPENSHAW, the President, being in the chair.

Mr. A. S. BLUNDELL BANKART introduced a discussion upon the

TREATMENT OF SPASTIC PARALYSIS.

This was due, he said, in the majority of cases to a defect of the upper motor neurone. The defect of the neurone being incurable, surgical treatment was limited to the relief of mechanical or functional disabilities. The cases were chiefly the cerebral palsies of children, diplegias, hemiplegias, paraplegias, and less often monoplegias showing the contractures resulting from the spastic condition of the muscles—in the lower limb typically spastic equinus with flexion of the knee and adduction of the thigh, and in the upper limb flexion of the forearm and wrist and pronation. The degree of mental impairment associated with the spasticity was a factor of great prognostic importance; it would be obviously unwise to operate upon idiots, and operation was also contraindicated in cases of progressive disease. Physiologically, spastic contracture was a tonic reflex contraction of muscles, a spinal reflex uncontrolled by the higher centres dependent upon the integrity of the reflex arc. Permanent change in the contracted muscle, anatomical shortening, might be long delayed but inevitably occurred, and, when present, must be treated by stretching the muscle or lengthening or dividing its tendon. Purely physiological contracture might be attacked either on the afferent or on the efferent side of the reflex arc. Foerster had advocated attack upon the afferent side by division of a number of posterior nerve roots, but this operation had given disappointing results and was now rarely performed by orthopædic surgeons. Attack upon the efferent side might be upon the motor nerve, as advocated by Stoffel, or upon the muscle itself either by diminishing its range of action by stretching it, or by tendon lengthening, or by tendon transplantation. The latter method had long been in use; it involved tenotomies or open lengthening or division of muscles, the adductors, the hamstrings, and the tendo Achillis, prolonged splintage in the corrected position, and the use, in many cases, of walking instruments. In spite of all these precautions relapse not infrequently occurred. The principle of Stoffel's operation was the destruction of a suitable proportion of the muscle fibres in the spastic muscle by cutting out their nerve-supply, thus allowing the deformity to be overcome by the action of the opposing non-spastic muscles, while still leaving some power in the affected muscle or group of muscles. Thus, for adductor contracture of the thigh one or both divisions of the obturator nerve were resected; for flexion contracture of the knee the nerve tracts to the long head of the biceps, the semimembranosus, and part or the whole of the semitendinosus were divided; while for equinus contracture one-half or two-thirds of the tract to the gastrocnemius and soleus were resected. Similar operations upon the nerve tracts to the pronators and flexors of the forearm were performed for contracture of those muscles. Stoffel developed the "cable theory" of nerves upon which the success of these operations depended, and showed that the cross section anatomy of the tracts in a large nerve trunk was fairly constant in any given situation. From a knowledge of the position of the tracts it was possible to divide any proportion of the tract that might be desirable in an individual case. The main nerve trunk being easily exposed, Stoffel's operation was both more simple and more adaptable than any other yet devised. The effect on the spastic muscle was immediate and lasting, and the necessity

for prolonged after-treatment was abolished. The end-results were most satisfactory in the case of the lower limb, children quite unable to stand being enabled to walk although the gait was ungainly, while in the less severe cases the improvement was often striking. In the case of the upper limb the natural tendency of the child to use the unaffected arm often led to neglect to make use of the improved function possible in the affected arm after operation; the flexion and pronation deformity was, however, abolished, and this alone was a satisfactory achievement.

*Discussion.*

The PRESIDENT had operated on nearly 100 cases of spastic paralysis by the older methods of tendon and muscle section which he had found on the whole satisfactory, especially if enough tendon were exsected. He had no personal experience of Stoffel's operation and only a limited experience of Foerster's operation, in which it was difficult to find the right roots and which yielded results certainly no better than those of the older method.

Dr. GEORGE RIDDOCH had been impressed by the results of Mr. Bankart's operations. He would have liked to have heard more of the methods of preventing contractures in spinal cord lesions, and pointed out that in such lesions there was a period of flaccid paralysis before the spasticity came on; during the former period treatment by splintage, &c., should be instituted to prevent the occurrence of contractures during the latter period. When the reflex arc was being restored very slight stimuli resulted in spasm and must therefore be avoided.

Mr. MUIRHEAD LITTLE said that his experience and his practice had been very similar to those of the President, and while he had no personal experience of the method advocated by Mr. Bankart, he welcomed his paper as a valuable contribution to our knowledge and a distinct advance, if not an ideal method. As regards Foerster's operation, that gentleman laid down as a rule that rhizotomy was only advisable in cases of severe spasm and good intelligence, a combination which was very rare indeed. Mr. Little had, however, had one such case in which he divided posterior nerve roots. As a result the spasm disappeared, but the child had scarcely any powers of balance and could hardly walk alone when last seen.

Mr. E. LAMING EVANS pointed out that both Hoffa and Lorenz had performed such operations before Stoffel described the operation now known by his name. While he would not go so far as Mr. Bankart in condemning the older operations of tendon section, &c., he agreed that Stoffel's operation gave admirable results in certain cases, notably in pronator spasm and adductor spasm in the thigh. He had noticed that the operation of muscle section of the adductors gave better results in some cases than in others, and suggested that the better cases were those in which the obturator nerve had been unintentionally divided. For contracture of the hamstrings he preferred the older operation, and for spastic equinus advocated open lengthening of the tendo Achillis which would not result in calcaneus deformity if care were taken to keep the knee extended.

Mr. H. A. T. FAIRBANK pleaded for the selection of an operation to suit each case individually, and discussed the age at which operation should be performed; in the case of the leg he operated at 3 years if the child could walk, but in the case of the arm preferred to wait until 6 years or later in order to secure the child's intelligent coöperation in after-treatment. He advocated the nerve operation for knee flexion (combined, where necessary, with tendon lengthening), but for valgus deformity had been disappointed with the results of section of individual nerve branches to the peronei. Where both branches of the obturator nerve required section he preferred the extraperitoneal abdominal operation. In cases where Stoffel's operation had been performed on the anterior tibial nerve the results had been bad; but the result of this operation for internal rotation of the thigh had been very satisfactory in one case. In the arm he thought the resulting paralysis outbalanced the good effects of a nerve operation, and in the case of spasm of the flexor carpi ulnaris would prefer a tendon transplantation. He did not agree as to the non-necessity of after-treatment by splints, &c., after Stoffel's operation. Foerster's operation had a high mortality without giving any improved results.

Mr. A. ROCYN-JONES was pleased with Stoffel's operation where the lower limb was affected, but preferred tendon transplantation in the upper limb. Really good results could only be obtained by any operation in cases where the spasm was not severe.

Mr. W. T. G. PUGH referred to a recent paper by Sharp, of New York, who divided cases of spastic paralysis in children into two classes: (*a*) Those in which there were symptoms and signs (ophthalmoscopic and from lumbar puncture) of increased intracranial pressure; and (*b*) those in which there were no such signs. For the former class he had performed decompression operations on the skull with results which were claimed to be good in a certain proportion of cases.

Mr. W. ROWLEY BRISTOW pointed out that section of both divisions of the obturator nerve would not throw out of action the main adductor—adductor magnus—so that it was of relatively small importance whether one or both divisions were cut. For spastic equinus he had found the older methods very satisfactory, but Stoffel's operation gave the best results in adductor spasm. The tendency in performing Stoffel's operation, at least in the first few cases, was to do an insufficient nerve section, but this was merely a matter of accurate "working out" beforehand. He agreed with Mr. Fairbank that one should adopt the operation best suited to the individual case.

Dr. A. FEILING was glad to hear Foerster's operation so generally condemned, and thought there was a field for Stoffel's operation outside the cerebral palsies of children. Mr. Bankart had operated for him on an elderly lady bedridden with paraplegia in flexion due to disseminated sclerosis. Stoffel's operation upon the nerves to the hamstrings and calf gave a satisfactory result, the patient being enabled to get about. But extensor spasm subsequently developed in one foot, which pointed the moral that one should be certain before operation that the lesion was not a progressive one. He did not think the operation was of much use in the arm in cases of hemiplegia.

Mr. R. C. ELMSLIE pointed out the necessity for accurate diagnosis before operating, having operated, naturally without benefit, upon two cases of congenital syphilis. Since then he had had the W.R. performed upon all cases. He thought it would be a mistake to scrap the old operation, especially in the case of the calf muscles, on account of the difficulty of judging the proportion of the nerve to exsect. He asked whether flexion at the hip and knee were not interrelated and what could be done for contracture of the psoas. He advocated re-education after Stoffel's operation.

Mr. NAUGHTON DUNN had more experience of operation upon muscle than on nerve in these cases, and thought that operation should be devised to suit each case. Spasm was seldom limited to one set of muscles, so that some form of splintage was usually necessary after any operation. If there was power in the non-spastic muscles he would prefer an operation upon muscle. He had tried Stoffel's operation, crushing and not cutting the nerve for peroneal spasm, and had been pleased with the results on the whole, although a few cases relapsed, owing, he thought, to insufficient nerve section.

Mr. P. JENNER VERRALL had had good results from Stoffel's operation in the legs of spastic children, but not in the arms of adults. He had successfully treated flexion at the hip by section of the psoas at its insertion, leaving the iliacus intact.

The PRESIDENT had always performed subcutaneous tenotomy of the tendo Achillis with only one exception in which the wound suppurated. For limitation of supination he divided the pronator radii teres and for

limitation of external rotation of the upper arm he cut the insertion of the subscapularis. He had had cases where, in spite of having got the legs straight by tenotomies, the patient was still unable to walk owing to flexion of the trunk by the psoas, section of which muscle brought a successful result.

*Reply.*

Mr. BANKART, in reply, said that cases of paraplegia in flexion were always severe and difficult to treat. Dr. Riddoch was talking of recoverable lesions, while the speaker had devoted his paper to permanent conditions in which contracture would recur after the most prolonged splintage as soon as the splints were removed. He agreed that Stoffel was not the first to perform the operation he advocated, but argued that it was the best operation yet devised for physiological contracture. When there was anatomical shortening the muscle must be attacked directly, and he sometimes combined this measure with the nerve section. He agreed that in the actual section of nerve there was a tendency to do too little rather than too much. He divided both divisions of the obturator nerve in the thigh and personally was disinclined to perform the abdominal operation. There were no age-limits for the operation, but he rarely saw cases younger than 2 or 3 years of age. The true Stoffel operation was carried out upon the main nerve trunk and not upon nerve branches. Personally, he had not been troubled by hip flexion; he began by operating for the spasm of the calf muscles and rarely had to treat even the hamstrings and never the hip flexion. While he agreed that some after-treatment might be beneficial, he said that there was no necessity, after Stoffel's operation, for cumbersome walking instruments.

## SECTION OF NEUROLOGY.

A MEETING of this section was held on March 8th, with Dr. WILFRED HARRIS, the President, in the chair.

Dr. E. FARQUHAR BUZZARD opened a discussion on

THE TREATMENT OF NEURO-SYPHILIS.

He reminded the section that the previous Sunday was the 430th anniversary of the return of Columbus from his voyage of discovery of America. The incidence in these islands of the disease (syphilis) brought back from America fell first upon Aberdeen and then upon Edinburgh; both these cities had met their responsibilities in fighting the scourge by adding many recruits to the ranks of the medical profession. In order to provoke discussion Dr. Buzzard laid down the following principles: (1) No distinction could be made between interstitial and parenchymatous neuro-syphilis as regards their preventive or curative treatment, since both were evidences of active syphilitic processes due to the presence of the spirochæte in the nervous system; (2) prevention of neuro-syphilis depended upon the complete eradication of the spirochæte or continued abeyance of its activities; and (3) that since there were no reliable data upon which cure (or eradication of the spirochæte) could be based, patients with syphilis should continue intermittent treatment for the rest of their lives.

*Parenchymatous Neuro-syphilis.*—It was formerly held that while the interstitial variety of cerebro-spinal syphilis was due to the active virus, the parenchymatous forms were due to some mysterious after-effect of the disease (or even, it was suggested, to the effects of treatment). The discovery of the spirochæte in the central nervous system in cases of tabes and general paralysis resulted in the view that these diseases were the result of active syphilisation of the nervous tissue, so that the same principles should govern their preventive and curative treatment as were applied to the treatment of syphilis elsewhere. In other words, the appearance of neuro-syphilis must be considered as evidence of failure to cure the primary disease. Yet in spite of the fact that various metals besides mercury were now available for treatment the late manifestations of syphilis were still frequent. He submitted that better results would not be obtained until we admitted that the word "cure" could not justifiably be used in relation to syphilis, and until we supported the principle of life-long treatment.

*Value of the Wassermann Reaction.*—Dr. Buzzard then quoted from a recent standard text-book, in which it was stated that many cases were "cured by a comparatively short course of arsenobenzol treatment," as judged by the "persistence of a negative W.R. for some years afterwards and the propagation of healthy children." He submitted that neither was evidence of cure, and that many tabetics and general paralytics could pass such a test. As regards the W.R. he held that while a positive result was a valuable piece of confirmatory evidence, a negative result was absolutely valueless; yet a negative result was highly credited and so became a direct menace to proper treatment.

*Need of Continuity of Treatment.*—While it was not yet proved that periodic courses of treatment year after year would prevent the development of neuro-syphilis, there was evidence that the more thorough and prolonged the treatment the less likely and the more delayed were the cerebral and spinal complications. Thus Fournier tabulated 321 cases of tabes according to treatment; in 24 there was no treatment of the original disease, in 70 treatment was insufficient, in 108 treatment with mercury lasted 3 to 6 months, in 74 similar treatment for 6 to 12 months, in 32 for 1 to 2 years, and in only 13 cases for a period of 2 to 4 years. The response of vascular and meningeal lesions to antisyphilitic measures had long been recognised, and he personally was convinced of the value of the same measures in cases of tabes, and perhaps of general paralysis when treatment was sufficiently early and prolonged. It was, of course, impossible to do away with such physical signs as Argyll Robertson pupils and absent tendon jerks; the result was satisfactory if the disease could be arrested and the disorders of function improved or cured by re-educative methods. Dr. Buzzard employed both mercury and arsenic in the treatment of neuro-syphilis. He did not favour the intrathecal method of administration of the latter, since it had not, in his experience, yielded any better results than those of intravenous or intramuscular medication, and its repeated use was attended by much discomfort and some danger to the patient. While he disregarded the Wassermann reaction in the blood he considered occasional cytological examination of the cerebro-spinal fluid helpful in regulating the treatment of acute conditions.

*Contra-indications to Antisyphilitic Treatment.*—Great caution was required in the treatment of patients showing advanced cardio-vascular disease. Albuminuria, without renal inefficiency, often cleared up under treatment, but true renal inefficiency was a contra-indication. Lately he had seen patients with early optic atrophy derive much benefit from energetic treatment which he had formerly considered to be contra-indicated in this condition. Leslie Paton had recently supplied information suggesting why some forms of optic atrophy were more amenable to treatment than others.

*The Clinical and Biological Aspects of Syphilis.*

Dr. H. MACCORMAC said that syphilis was studied from two different standpoints; either the signs and symptoms were observed, or such biological reactions as the W.R. The former was concerned with the anatomical structure involved, the latter indicated infection with the spirochæte. When considered from the latter point of view syphilis was divisible into two groups of cases, early cases in which the symptoms and signs rapidly disappeared and the W.R. became negative under treatment, and late cases in which the W.R. remained positive in spite of treatment. The speaker's routine treatment for the first group was the intravenous injection of a "914" compound once a week for 10 weeks, followed

by 12 intramuscular injections of mercury at weekly intervals. If the W.R. was then negative, mercurial treatment was continued for two years, but if positive the course of "914" was repeated. In some cases where patients had discontinued treatment early, cure had, as judged by a negative W.R. and the propagation of healthy children, apparently been brought about by a few injections of "914." He regarded the persistence of a positive W.R. in late syphilis as indicating that cure could not be hoped for or expected, so that treatment was directed solely to the local lesion. For such cases he employed short intensive courses of treatment, repeated as circumstances dictated. Between these two groups was an intermediate series of cases, including those patients whose early treatment had been insufficient and whose W.R. was found to be positive two or three years later. For this class, some of whom showed early involvement of the central nervous system, he thought prolonged treatment justifiable in the hope of obtaining eventual cure.

*Neuro-syphilis not due to a Special Spirochæte.*

The belief that neuro-syphilis might be due to a special variety of spirochæte arose from the common observation that when late lesions appeared in the skin the nervous system escaped, and vice versa. Dr. MacCormac had seen gummata in conjunction with neuro-syphilis on two occasions, and further pointed out the frequency of tongue manifestations in all forms of late syphilis. Fournier pointed out that in cases of general paralysis the primary lesion was often transient, and secondary eruptions ephemeral or non-existent. While many patients with neuro-syphilis denied all knowledge of infection, the same occurred with cases of late cutaneous lesions. There was thus no positive evidence of the existence of a neurotrophic spirochæte and no indication for modification of treatment to meet the possibility of a special infection.

Changes in the cerebro-spinal fluid in syphilis had been discovered by Wechselbaum, and the actual invasion of the cerebro-spinal fluid by the spirochæte at an early stage had been demonstrated by Plant and others. Some authorities placed the frequency of these changes at as high a figure as 80 per cent.; it was certainly far higher than the rate of incidence of neuro-syphilis. Further, the work of Fildes, Parnell and Maitland was quoted to show that the W.R. of the cerebro-spinal fluid was generally influenced by treatment with even small doses of "914." One must therefore agree that it was possible to affect the central nervous system by the ordinary intravenous method of medication at least in the early stages of the disease. Late syphilis of the nervous system was as resistant to treatment as late syphilis elsewhere, but in the interstitial form, at least, derived maximum benefit from intensive intravenous medication. In corroboration of this it was pointed out that interstitial disease in a structure totally devoid of blood-vessels, the cornea, was favourably affected by intravenous injections. Dr. MacCormac thought that no advantage was to be gained by spinal drainage or by intrathecal medication, and believed that the apparent success of the latter in some cases where intravenous therapy had apparently failed was due to the delay, often of two or three months, in appearance of the good effect of the intravenous form of therapy.

*The Needs of the Individual Case.*

Sir JAMES PURVES-STEWART had no regular treatment for syphilis, but adapted his treatment to the needs of the individual case, with the proviso that treatment of the disease itself should be lifelong. In the case of neuro-syphilis the method of intracisternal injection of salvarsanised serum, which he had already described at the British Medical Association conference in Glasgow, was meant to be supplementary to and not to replace the ordinary methods of treatment. By the employment of this method he had secured a very good result in one case of early neuro-syphilis exhibiting Jacksonian fits in the right arm. The fits stopped after one intra-cisternal injection, and the man was well one year later. In addition the W.R. in both blood and cerebro-spinal fluid had been made negative and the cell content of the latter had shown a steady decline almost to normal. This was an exceptionally good result; other cases had improved to a less extent. In general paralysis he had found it impossible to get the W.R. in the cerebro-spinal fluid negative, although some cases had benefited. The technique was quite simple; a needle passed through the atlanto-occipital ligament would be felt to enter the cisterna magna at a point where it (the cisterna) was three-quarters of an inch wide, so that with reasonable care there was no danger of injuring the medulla.

Colonel L. W. HARRISON said that the older he became the more prolonged was the treatment he advocated for syphilis. Even general paralysis could be benefited by antisyphilitic treatment. While agreeing that a negative W.R. did not necessarily indicate cure he advocated the performance of the W.R. in the cerebro-spinal fluid of all cases of syphilis within five years of infection, as experience showed that this was the latest period at which the W.R. could be affected by treatment. He mentioned the frequency of the occurrence of aneurysms amongst tabetics as further evidence against the theory of a special spirochæte for neuro-syphilis. Judging from recent experience with silver salvarsan he thought that the dangers of arsenobenzol medication in cases of cardio-vascular disease had been much exaggerated, and he added that these preparations (arsenobenzol) were useful adjuncts to mercury in the treatment of late syphilis. He had seen some good results from intrathecal medication in tabes, but had also seen equally good results from simple lumbar puncture.

Dr. H. HEAD pointed out that a whole group of diseases was included under the title of general paralysis, and that these cases showed every gradation between two extremes as regards the effects of treatment. There were some in which the cerebro-spinal cell content fell rapidly and the W.R. became negative under treatment within six months, and others who showed little or no improvement either in symptoms or biological reactions. There was nothing to show to which class any given case belonged except time and the effects of treatment. He pointed out that the mercury in mercurialised serum used for intrathecal injection was converted into an inert albuminate, and suggested that the reaction following an intrathecal injection was one of protein shock.

Dr. G. RIDDOCH considered that treatment should be directed against the primary disease, and should be continued until the W.R. in both blood and cerebro-spinal fluid was negative, or until the persistence of a positive reaction and a high cell content of the cerebro-spinal fluid made it obvious that no further treatment would benefit the disease, when treatment should be directed to symptoms.

*The Risk of Toxic Effects.*

Dr. C. P. SYMONDS pointed out the risk of toxic effects from such dosage of arsenobenzol compounds as were employed by some of the speakers. In his own practice he now divided the total dose of 10 g. of arsenobenzol into two courses with an interval between, on account of the high incidence-rate of toxic phenomena when the dose was given in one series. He had seen cases of tabes with a negative W.R. both in blood and cerebro-spinal fluid. It was difficult to assess the results of treatment of neuro-syphilis, since cases were apt to show spontaneous remissions and aggravations of symptoms.

Dr. A. FEILING agreed with the opener that a negative W.R. in no way indicated cure of the disease, and gave instances of cases of indubitable neuro-syphilis with negative reactions. He had seen severe toxic phenomena, such as acute myelitis, coma and paralysis, from excessive zeal with arsenobenzol.

The PRESIDENT was glad to have heard the note of warning by the last speakers. In his experience the

biological reactions were not helpful in neuro-syphilis. He preferred the original salvarsan (or kharsivan) to the newer "914" compounds, and gave instances where he had used "606" with success after "914" had failed, although he now only gave two injections. He had found that the intrathecal injection of salvarsanised serum collected 14 days after the intravenous injection had a wonderful result upon the pains of tabes; after a transient aggravation for a few hours they disappeared completely, often for a year. He was at present giving a trial to the pyrexial treatment of general paralysis with results which, so far, were very satisfactory.

Dr. BUZZARD, in reply, said he could not agree with Dr. MacCormac's view of the W.R., but agreed that there was not sufficient evidence of a special spirochæte for neuro-syphilis. His frank declaration to patients that there should be no end to the treatment of syphilis had never produced any psychic ill-effects. He was not convinced that Sir J. Purves-Stewart's intra-cisternal medication had achieved any more than might have been done by intravenous injections. He gave a further instance of neuro-syphilis with a W.R. which remained negative after a provocative injection.

Dr. MACCORMAC, in reply, said he had not had any unusual proportion of toxic effects from the course of arsenobenzol he employed. He agreed that the W.R. was not generally helpful in neuro-syphilis, but maintained that a negative W.R. three years after infection was a fair criterion of cure. All his cases of neuro-syphilis were told to report from time to time for short courses of treatment.

## MEDICAL SOCIETY OF LONDON.

### VALUE OF LABORATORY TESTS IN DISEASES OF THE LIVER AND PANCREAS.

A MEETING of this Society was held on March 11th, Lord DAWSON, the President, being in the chair, when Dr. LANGDON BROWN read a paper on this subject.

He said that the liver and pancreas were both developed as outgrowths from the elementary tract, and their close coöperation was shown by the way they both poured their secretions into the intestines at the same point, and in their complementary rôles in the utilisation of fat and in carbohydrate metabolism. The liver helped to prepare all three foodstuffs for utilisation by the tissues. The bile was an excretion and a secretion, and the liver was an important agent in detoxication and in maintaining the constant composition of the blood. The liver had a great reserve capacity and did not reveal its failure of function to ordinary tests until the time for successful treatment was past. Its various functions were not equally inhibited by disease, so that tests covering different fields of liver activity must be applied.

*Tests of Hepatic Metabolism.*

(*a*) *Protein.*—The nitrogen partition test aimed at estimating hepatic inefficiency in respect of protein metabolism by determining any loss of the disaminating and urea-forming functions of the liver. One would expect that in hepatic inefficiency urea excretion would fall, while the excretion of the precursors of urea, such as ammonia and amino-acids, would not. But in practice it was found that a small proportion of the liver substance was capable of making the normal amount of urea; the amount of urea excreted varied with the diet; increase in ammonia formation might be a protective step against acidosis and was not evidence of failure of urea formation; and lastly, variations in the kidney threshold might materially affect nitrogenous excretion. This difficulty could be surmounted by an examination of the blood rather than of the urine, but the other three objections, Dr. Langdon Brown thought, vitiated the nitrogen partition test. Also de Wesselow and Wyatt had shown that in normal pregnancy a low urea excretion was the rule, so much so that a rise of blood-urea above 40 mg. per cent. implied a failure of renal function in pregnancy. This added to the difficulty of applying nitrogen partition tests to the hepatic toxæmias of this condition.

(*b*) *Carbohydrates.*—"Lævulose test." Lævulose could, within its limits of tolerance, be stored by the liver and muscles as fast as it entered the blood-stream. Maclean and de Wesselow[1] showed that this sugar when administered by mouth in doses of 30 to 50 g. in healthy subjects with an intact liver did not raise the blood-sugar, but when the liver was defective, the sugar was not stored quickly enough and entering the blood-stream increased the blood-sugar in proportion to the hepatic defect. The speaker considered this levulose test to be one of the best for hepatic efficiency. According to Spence this test showed that in catarrhal jaundice some hepatitis was present and by its means Mackenzie Wallis had shown that where a course of an arsenical preparation (such as salvarsan) had been given, some hepatic deficiency existed for at least three months.

*Diastase Test.*—This was originally defined by Wohlgemuth as a renal efficiency test. He estimated the amount of diastase in the urine, and claimed that if renal efficiency were impaired, the output of diastase would fall. Dr. Langdon Brown and Dr. Mackenzie Wallis had worked on cases of war nephritis, but their more recent work had shown that the diastase in the urine did not necessarily run parallel with the diastase in the blood. This test had proved of more value in recognising pancreatic disease because the alteration of the amount in the blood was so gross. However, in very chronic conditions there might be no excess, but a deficiency. This was so in ordinary clinical diabetes. Cammidge, with Forsyth and Howard,[2] had adduced reasons for believing that diastase was hepatic in origin, since the diastase value increased as more and more of an animal's pancreas was excised, right up to total extirpation, while hydrazine phosphate, which was a liver poison, but was not toxic to the pancreas, reduced and might completely abolish the diastase output. They concluded that diastase was the agent which converted glycogen into sugar, and its action was controlled by the internal secretion of the pancreas. If this control failed there would be increased diastase production by the liver, and increased diastase output would suggest pancreatic insufficiency, but a defect of diastase in the blood had not helped much in determining hepatic insufficiency, and defective output in the urine could not help much because of the behaviour of the threshold of the kidney.

(*c*) *Fats.*—Leathes had shown that the fat normally present in the liver was the unsaturated one, but the one that occurred after poisoning with phosphorus or after an anæsthetic was the saturated one. He considered that the function of the liver was the conversion of saturated fats into unsaturated ones. Whipple devised the lipase test. Normal blood contained a very constant amount of fat-splitting ferment which was increased in diseases of the liver, so that the increase of lipase in the blood as measured by the power of splitting ethyl butyrate, was a criterion of hepatic damage. Whipple had applied this to chloroform poisoning, and Mackenzie Wallis[3] to salvarsan poisoning. The damage had, however, to be rather gross before the lipase increase was enough to be reliable.

*Tests of Antitoxic Function.*

The process of rendering a poison harmless by conjugating it with a protective substance was most often carried out by the liver. Thus the toxic indol was combined with sulphuric acid into the harmless sulphate indican, but if the liver cells were diseased such combination could not take place, so that such substances as indol, skatol, and phenol could pass directly into the blood. There was no simple test

[1] Quarterly Journal of Medicine, January, 1921.
[2] Proc. Roy. Soc. Med. (Urological Section), 1922, xv.
[3] Medical Research Council's Report on Salvarsan, vol. II.

for recognising this. The formation of harmless glycuronates after administration of camphor, morphia, &c., was a liver function. A simple test was introduced by Roch, who gave ½ gr. of sodium salicylate half an hour before food. This should be converted into a glycuronate which did not give a purple coloration with ferric chloride solution. If the urine excreted for four hours after a meal did give this colour, hepatic insufficiency was present.

*The Hæmoclastic crisis* might also be regarded as due to a failure of the antitoxic power of the liver. Widal[4] considered that when the liver was diseased the normal post-prandial leucocytosis was replaced by a leucopenia. C. M. Wilson considered that this was the only test which gave an early warning of hepatic insufficiency.

*Tests of Biliary Function.*

The gall-bladder concentrated the bile and added cholesterol and mucin, so that examination of the bile secreted into the duodenum would reveal the presence or absence of obstruction to the cystic duct. H. E. Griffiths[5] had confirmed the general impression that gall-stones produced reflex hyperchlorhydria in 90 per cent. of cases. A sharp flow of bile into the duodenum, which could be extracted by the Einhorn tube, was promoted by the injection of a few drachms of concentrated magnesium sulphate solution provided the bile passages were patent. This test had enabled him to diagnose empyema of the gall-bladder, which was confirmed at operation. Lyon[6] had extended this method by collecting three samples of bile, the first transparent and golden-yellow from the common duct, the second darker and more viscid from the gall-bladder, and the third thinner from the hepatic ducts. By examination of these three he was able to locate the situation of biliary disease. Failure of the bile to enter the bowel was indicated by steatorrhœa and increased intestinal putrefaction, with increase of indican in the urine. In incomplete obstruction of the bile-ducts the fatty contents of the stools might mask the colour due to small amounts of bile, but the presence of urobilin could still be demonstrated by spectroscopic examination of alcoholic extract of the fæces. Van den Bergh's test had been investigated by Dr. Christopher Andrewes, who concluded that "practically all cases were compatible with the theory that the direct reaction is due to obstruction and the indirect reaction due to disordered function of liver cells." The biphasic reaction limited the clinical value of the test; further, the test was gross and not likely to give help in other than cases easily diagnosable clinically. Dr. Langdon Brown went on to discuss the fate of the bile pigment, and stated his belief that urobilin was formed in the intestine from bile pigment through bacterial agency. As regards the presence of bile salts in the urine, in the early stages of jaundice this suggested an obstruction rather than toxæmic jaundice.

*Tests for Pancreatic Inadequacy.*

*Signs of Defective External Secretion.*—There might be failure of tryptic digestion, as shown by the presence of unaltered muscle nuclei in fæces after a meat meal, but this was not easy to prove. There might also be failure of starch digestion, and starch granules might be detected in the stools after unboiled starch had been given, but the most valuable test was the failure of fat digestion as shown by the presence of excess of neutral unsplit fat.

*Signs of Defective Internal Secretion.*—Diminished sugar tolerance might be expressed in glycosuria and hyperglycæmia two hours after a dose of 50–100 g. of dextrose, whereas the normal tolerance for dextrose was 150–200 g. The diastase test had already been discussed. Dr. Langdon Brown considered it one of the best for recent pancreatic damage. The adrenalin eye test of Loewi was simple and easy to apply. In the case of pancreatic insufficiency, the pupil dilated 20–60 minutes after dropping adrenalin into the eye. Normally this did not happen. Recently, however, the speaker had seen a positive reaction in the case of acute appendicitis.

*Signs of Pancreatic Disintegration.*—Pancreatic lipase could be found in the urine, and a pentose might sometimes be found in the urine from the breakdown of pancreatic nucleo-proteins. This was the basis of Cammidge's test. Dr. Langdon Brown felt that the ultimate diagnosis must rest on the clinical as well as the biochemical findings.

*The Clinical Aspect.*

Prof. F. LANGMEAD said that he had endeavoured to use the tests under discussion in the clinical medical unit to assist in arriving at more accurate diagnosis. At the outset he was somewhat discouraged by the number of the tests and by the fact that it was only in the more acute cases that the tests were likely to be helpful, so that in such cases the patient was prone to die or recover before any considerable investigation had been undertaken. All research had a value, even though from a clinical aspect such value was not immediately obvious; but with the single exception of blood-sugar estimations in cases of suspected or true diabetes mellitus the laboratory tests had not seemed to him to have any practical usefulness in providing or establishing a diagnosis, amplifying prognosis, or directing treatment. With regard to the external secretory function of the pancreas little reliance could be placed on those tests in which the testing substance was submitted to all the vagaries of the alimentary canal. The diastase content of the urine, estimated with due regard to the pH value, was now losing rather than gaining adherents. The fat content of the stools, particularly the proportion of neutral and changed fats, was more helpful, but even this was often misleading, as in three cases (quoted by the speaker) in which the urinary diastase test also gave an equally incorrect indication of pancreatic disease, where, in fact, the post-mortem findings definitely proved there was none. Loewi's test had given him no help, but the internal secretion test by the reaction of the pancreas to a burden of sugar was of undoubted value. Of the liver tests, the hæmoclastic crisis test had little scientific basis, while the lævulose test, which appeared to be the most reliable, was applicable chiefly to acute destruction of the liver, and gave little help in chronic disorders such as cirrhosis. In short, he contended that efficiency tests for the liver, pancreas, and bile passages were still in their infancy, and had already outrun our knowledge of physiology. The difficulties of such tests were increased by the multiplicity and interdependence of the functions of the two organs. While he had no desire to belittle research, he saw a danger of these tests being used as ready reckoners of diagnosis, a function which they were as yet unfit to fulfil.

Dr. J. W. MCNEE agreed with Prof. Langmead that liver function tests were still in their infancy, and that it must necessarily be difficult to assess by any one test the function of an organ like the liver which had so many different activities. The lævulose test and the blood lipase test, for instance, were useful in acute but not in chronic liver disease. Tests involving the use of the Einhorn tube, and more particularly the dye tests, were of doubtful value. One simple test, that of Brewley, he had found useful; the small glancing fat droplets in blood seen under the microscope with dark-ground illumination were much diminished in chronic liver disease. The value of Van den Bergh's test lay chiefly in the fact that it re-directed our investigations to the blood where bile-pigments could be recognised in high concentration before they appeared at all in the urine. The biphasic reaction robbed this test of any real practical value, for it occurred in just those cases in which it might have been clinically helpful. Notwithstanding the fact that no one test afforded accurate information, a number of tests in conjunction might occasionally be helpful and by means of them he had recently saved two cases from the surgeon.

[4] Presse Méd., Paris, 1920, xxviii., p. 890; 1921, xxix., p. 121.
[5] THE LANCET, 1923, i., 270.
[6] Amer. Jour. Med. Science, Philadelphia, 1922, clxiii., pp. 60/223.

*The Laboratory Side.*

Dr. R. L. MACKENZIE WALLIS maintained that, while one test alone might be misleading, reliable and helpful results might be obtained from a combination of the tests. The lævulose-tolerance test was both accurate and delicate, and by the employment of this test he was able to show the damage done to the liver by salvarsan injections, and that the maximum damage occurred three months after the last injection. The disadvantage of this test was the lengthy and elaborate technique it involved; a simpler test given by 65 per cent. of these cases was the diphenylamine test in the urine. The lipase content of the serum was another test he had employed; fairly considerable damage had to be done to the liver before this test gave a positive result. He agreed with Dr. McNee as regards tests involving the use of the Einhorn tube, and suggested that the secretion of bile into the duodenum after the injection of magnesium sulphate was due merely to osmotic pressure. With H. E. Griffiths, he investigated the pancreatic function in cases of gall-stones, which subsequently came to operation so that the results had been checked. Hyperchlorhydria was present in many, the blood lipase increased in some, and the urinary diastase generally increased in these cases. By the employment of such a combination of tests he maintained that valuable help could be given to the clinician.

Dr. E. C. DODDS pointed out that recent experimental work showed that an animal could survive the excision of four-fifths of its liver substance, so that the normal liver possessed an enormous reserve. Similarly in the human subject it was well known that patients might have very extensive secondary growths in the liver without showing any signs of hepatic insufficiency. He considered that some help might be obtained from Fouchet's reaction in blood serum, which gave a brisk reaction in obstructive and a slower reaction in toxic jaundice; from the glycuronic-acid compounds reaction in urine (Roger's test); and from the rise of non-protein nitrogen compared with the amino-acid nitrogen of the blood.

Dr. G. A. HARRISON said that Loewi's adrenalin mydriasis test had been practically useless. Estimations of diastase in blood and urine had been valuable in acute and subacute pancreatic lesions, but generally of little help in chronic disease. A high urinary index, when accompanied by a raised blood diastase, was diagnostic of active pancreatic disease, but when accompanied by a normal value for blood was merely suggestive. [Here a slide was shown illustrating the various stages in the digestion of meat fibres which may be seen microscopically in a simple saline emulsion of fæces. It was concluded that, in the absence of gross diarrhœa, meat fibres showing well-marked transverse striations and irregular ends were very suggestive of pancreatic disease.] An important point in liver disease, Dr. Harrison continued, was the frequency of coincident damage to the pancreas, so much so that in many instances it was a good rule to test the efficiency of both organs. The difficulty was to devise methods that would test the one organ to the exclusion of the other. This criticism, for instance, applied to the new lævulose test, which otherwise had been valuable. Van den Bergh's reaction, coupled in severe jaundice with examination of the fæces for stercobilin and examination of the urine for urobilin, combined with a blood count, had often been instructive. Four illustrative cases were cited, and the conclusion was drawn that laboratory tests were of real value if regarded as an extension of the clinical examination and not in its stead.

*A Surgical Point of View.*

Mr. H. E. GRIFFITHS had already, in a Hunterian lecture,[1] endeavoured to show the intimate anatomical and physiological relationships between the stomach, pancreas, gall-bladder, and duodenum, which together formed a complex. Chemical tests would necessarily refer to the whole complex, although they might indicate greater change in one unit of the complex than in another. Laboratory tests, conducted by an expert, were, however, of the utmost value in research in confirming and interpreting clinical findings and in guiding the clinical worker in his search for further signs of disease. In his own work the tests conducted by Dr. Mackenzie Wallis had been most helpful. As an example of the value of laboratory tests in diagnosis and prognosis, he mentioned the fact that the presence of occult blood in the fæces in a case of carcinoma of the pancreas indicated that the growth was one of the more highly malignant columnar-celled adeno-carcinomas of the ampulla of Vater and not the less malignant spheroidal-celled carcinoma. He also maintained that the Einhorn tube was a valuable aid by yielding some of the duodenal contents for examination, and pointed out that the action of magnesium sulphate solution in promoting a flow of bile could hardly be due to osmotic pressure, since the sphincter concerned could withstand a pressure of 700 mm. of water. Loewi's test he had found useful, and it was always positive in cases which had recovered from acute pancreatitis even years afterwards. In the differential diagnosis between acute pancreatitis and perforated gastric ulcer the diastase in urine test, which took but half an hour to perform, was almost diagnostic and might save the surgeon from increasing his difficulties by making an incision on the wrong side of the abdomen. The "pancreatic tripod" of tests, Loewi's test, the diastase test, and the tests for fat in the fæces were of considerable value to the clinician.

Dr. A. M. DE FOSSEY (Vichy), speaking in French, said that in France urobilin was regarded as giving a valuable urinary test of hepatic efficiency, and it was held that other tests upon the urine were not of much value. The nitrogen partition test in the blood was regarded as an important index of liver function.

[1] THE LANCET, 1923, i., 265.

## LIVERPOOL MEDICAL INSTITUTION.

A MEETING of this Institution was held on March 1st, Prof. J. HILL ABRAM, the President, being in the chair.

Dr. ARTHUR GEMMELL read a note on

*Menstruation and Pregnancy in Hodgkin's Disease.*

He described a case of Hodgkin's disease commencing in the second month of the second pregnancy of a young married woman, aged 23, which came under notice in 1919. The diagnosis was established by pathological examination of one of the glands, and treatment with arsenic and extract of lymph gland with the application of X rays to the site of glandular enlargement, was commenced and continued throughout pregnancy. The labour and puerperium were normal. Under further treatment all traces of glandular involvement disappeared. A third pregnancy commenced in 1920 and the glands began to enlarge at the eighth week. The patient then contracted influenza and aborted. Treatment as before caused complete disappearance of the swellings in a few weeks. Her fourth gestation began in the spring of 1922 and the glands enlarged when she was about 18 weeks pregnant, but treatment as before kept the disease in check, and she had a normal labour and puerperium with a healthy living child. Little had been written on the relationship of Hodgkin's disease to menstruation and pregnancy. A collection was made of 57 cases in the female from the Liverpool hospitals and the literature. In 17 cases between puberty and the menopause whose menstrual history was obtained, 14 showing varying degrees of oligomenorrhœa of varying degrees even up to complete amenorrhœa, and three were unchanged. Of the ten definitely parous women, six dated the onset of their disease from a pregnancy. Twenty-five cases of the series (43·8 per cent.) had their onset in periods of physiological amenorrhœa.

Considering the above with the well-known fact that women are less liable to the disease than men, it was suggested that it is the ovarian hormone which confers this relative immunity on women, and that

they only contract the disease when there is a hypo-function of the ovary as regards its internal secretion. This hypo-function might be true, as before puberty or after the menopause, or relative as during pregnancy. The corollary to this suggestion was that ovarian extract should be given in addition to the treatment already mentioned. Post-mortem notes on the genitalia were only available in four cases, and these supported this view. Notes on the labours and puerperia were only available in six cases. These showed that on the whole labours were normal with a tendency to post-partum hæmorrhage. But three of the patients died within three months of labour. No abortions were definitely attributable to the disease. It would appear that where early Hodgkin's disease and early pregnancy occur together the uterus should be emptied and the woman warned of the danger of future pregnancies.

Dr. Gemmell drew the following conclusions: (1) Possibly Hodgkin's disease occurs, in the female, when there is a hypo-function of the ovary; (2) diminution in the menstrual flow is a symptom of Hodgkin's disease; (3) where early Hodgkin's disease and early pregnancy occur together, the pregnancy should be terminated.

Dr. WALLACE JONES read a note on a case of

*Osteitis Deformans.*

The case was that of a man who commenced four years ago with pain in legs and muscular weakness which was thought to follow a slight accident to the hip. There was no family history of similar disease. He had lost 2 inches in height and the size of his hat had increased from 6⅞ to 7¼. There was a hunch-back appearance with kyphosis and marked bowing of both tibiæ. The movements of both hip-joints were limited. The arteries were thickened.

Dr. THURSTAN HOLLAND exhibited a series of lantern-slides showing the condition of various bones, including the skull. These demonstrated the typical changes in the X ray appearances caused by the various degrees of the combined rarefying and proliferating osteitis.

Dr. HENRY COHEN read a note on

*Oxycephaly,*

illustrated by photographs and radiograms of three cases which had come under his observation. He emphasised the pressure origin of the so-called "digital markings" by comparing them with the appearances seen in hydrocephalus and brain tumour. In addition to the usual eye-signs, congenital cataract was present in a case of scaphocephaly.

Dr. NORMAN CAPON believed that the convolutional impressions were due to disordered bone development rather than to pressure. Somewhat similar impressions were found in craniotabes; and when they occurred in hydrocephalus it was to be expected that the small volume of liquid lying between the external surface of the brain and the internal surface of the cranial bones would nullify direct pressure as the cause.

Mr. ROBERT KENNON read a paper on

*Appendicitis*

as a possible epidemic disease. In support of this he urged that whereas the yearly mortality in the Liverpool Royal Infirmary for the past five years had averaged 6·2 per cent. for acute cases, a study of the monthly admissions showed more cases admitted from May to October, and whilst periods of six months may elapse without a death, on four occasions the monthly mortality reached 33 per cent. Cases admitted in 1921 were greater in number, of greater pathological virulence (abscess formation 56 per cent. against 33 per cent. in other years), and had a higher mortality, especially in the month of June. The delay prior to admission was five days, in each of the past four years—operation within four hours shortened the length of illness by ten days—except in 1921, when the gain was reduced to five days. The mortality curves and incidence curves of hospital and general practice bore no relation to influenza, but followed other streptococcal diseases such as rheumatic fever, erysipelas, and puerperal fever, less so scarlet fever. Liverpool has a lower death-rate from appendicitis than Manchester, Birmingham, and Leeds when the population was considered.

## ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on March 1st, Dr. ALEXANDER OGSTON, the President, in the chair.

Dr. JAMES LAWSON, Tor-na-Dee Sanatorium, demonstrated a case of

*Cauterisation of Pleural Adhesions by Thoracoscopy,*

with skiagrams. The patient suffered from pulmonary tuberculosis affecting practically the whole of the right lung. An artificial pneumothorax was induced on that side, but complete collapse of the lung was prevented by adhesions in the region of the upper lobe and of the diaphragm. The thoracoscope was inserted into the pneumothorax cavity in the sixth space in the scapular line and the adhesions inspected; the upper adhesion was found to be too extensive for cauterisation; the lower adhesion was divided by the cautery passed through another cannula inserted in the sixth space in the anterior axillary line, the action of the cautery being controlled by inspection through the thoracoscope. Local anæsthesia only was employed. Following this operation there was a considerable increase in the amount of collapse of the lung, though not so much as would have followed had it been possible to deal with the upper adhesion also. Dr. Lawson described briefly the difficulties of the operation, showed the patient, and demonstrated the instruments required, and skiagrams of the case.

A short discussion followed, in which Prof. ASHLEY MACKINTOSH, Mr. F. K. SMITH, and the PRESIDENT took part.

Mr. SMITH then read a paper, with lantern illustrations, on the

*Treatment of Fractures by Parham's Bands,*

in which he pointed out that any method which reduced the loss of working time in a fracture case was worthy of trial. He indicated the disadvantages of different methods of fixation by open operation, and stated that he had found the advantages of Parham's method to be, the ease of application, the comparatively small wound required, the small amount of manipulation necessary, and the better chance of aseptic healing. The cases most suitable were those of oblique and comminuted fractures. In transverse fractures, bands alone were unsuitable, and should be combined with Sherman's plates. Mr. Smith demonstrated the special instruments used, and showed a series of lantern slides of skiagrams of eight cases before and after operation.

In the subsequent discussion, Prof. JOHN MARNOCH, Mr. ALEX. DON, Mr. ALEX. MITCHELL, Dr. GEORGE ROSE, and the PRESIDENT took part.

Mr. G. H. COLT read a paper on the results of the treatment of cases of

*Acute Appendicitis*

occurring in Prof. Marnoch's wards in the Aberdeen Royal Infirmary from January, 1911, to December, 1921. There were 675 cases of which 568 (84 per cent.) were operated on within 24 hours of admission and 107 were kept under observation, 92 of the latter being subsequently operated on without mortality and a definite lesion of the appendix found in all of them. The mortality in the 568 cases operated on urgently was 6·3 per cent., but excluding 7 cases of wrong diagnosis with two deaths, one being a case of volvulus and one a case of small ovarian cyst from which streptococci were isolated, the mortality was 6·07 per cent. In 94 cases without pus it was 1·06 per cent. drained and in 165 such cases not drained 1·81 per cent. In 170 gangrenous cases the mortality was 8·82 per cent., in 62 perforated cases 11·3 per cent., and in 99 abscess cases 3·03 per cent. The chief conclusions were: (1) about 84 per cent. of acute cases require urgent operation; (2) about 90 per cent. of

all cases requiring urgent operation will suffer primary appendicectomy; and (3) when pus appears in a gangrenous case the risk rises from about 2·4 per cent. to 8·8 per cent. and in some third day cases to double this, the risk rising geometrically as the time increases arithmetically.

Prof. MARNOCH and Mr. SMITH contributed to the discussion, and some remarks from the statistical point of view were made by Dr. J. F. TOCHER.

## NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held in the Liverpool Medical Institution on Feb. 16th, Prof. W. BLAIR BELL in the chair.

*Aveling's Repositor.*

Dr. MILES H. PHILLIPS recorded a case of chronic inversion of the uterus to emphasise the value of Aveling's repositor. A complete inversion of uterus and cervix was discovered four months after confinement. After the necessary attention to the local toilet, the repositor was introduced and completed its work within 12 hours. He had had two small holes bored through the head to relieve the difficulty previously experienced in removing a repositor with a solid head, owing to suction between it and the uterus. This has been completely satisfactory. He further emphasised the slight pressure required. It was furnished by two rubber "paper bands."

Miss F. IVENS said that as a house surgeon she had used the repositor; the patient had had to be kept under morphia owing to severe pain; the suction between the head of the repositor and the uterus had caused difficulty in removal.

Dr. A. DONALD had found the repositor successful in four cases.

Dr. J. H. WILLETT had had no difficulty in applying the repositor on one occasion, but it had entirely failed after 48 hours. In this case the inversion had only been discovered some time after confinement, and involution was complete. At operation the peritoneal surfaces were found adherent to one another, evidently owing to infection; this was supported by the occurrence of phlegmasia alba dolens after the operation.

Dr. FLETCHER SHAW agreed that the peritoneum in some cases might be damaged and adhesions develop. He cited an acute inversion he had seen: primary treatment to relieve the shock, and 24 hours later reduction of the inversion under ether. A fortnight later the abdomen had to be opened for intestinal obstruction—coils of intestine were found adherent to the uterus.

Dr. PHILLIPS, in reply, agreed that the repositor would probably fail in cases where adhesions were present; so far he had found it uniformly successful.

Dr. LEITH MURRAY, Dr. MEREDITH LITTLER, Dr. RUTH NICHOLSON, Dr. PICKERING JONES, Dr. WILLETT, Dr. D. DOUGAL, Prof. H. BRIGGS, Miss IVENS, and Dr. FLETCHER SHAW showed cases and specimens.

## DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the Royal Devon and Exeter Hospital on Feb. 22nd, Dr. G. P. HAWKER, the President, being in the chair.

Dr. R. V. SOLLY read a paper on

*Some Laboratory Tests in Diabetes.*

He began by reviewing the modern theories of diabetes, particularly with regard to the experiments of Allan and others with reference to depancreatised dogs and the influence of the hormone from the islands of Langerhans on the metabolism of sugar, and he touched on the mechanism regulating the blood-sugar in relation to the endocrine glands generally and also the special centre in the brain acting through the splanchnic nerves. He then referred to estimations of blood-sugar and laid stress on the importance of carrying out a glucose-tolerance test, with estimations every half hour for at least two hours, according to the method described by H. Maclean, and the plotting out of the results as a curve. A single estimation of blood-sugar taken at any time without relation to meals was of little value. He showed curves of estimations he had carried out in normal persons, renal diabetes, the "lag" curve, and cases of true diabetes. He then attempted to give a definition of acidosis and advised the following tests in such a condition: 1. The tests for acetone bodies in the urine. 2. The ammonia coefficient in the urine. 3. Estimation of the $CO_2$ in alveolar air. 4. Estimation of the sodium bicarbonate content of the blood plasma.

Dr. F. A. ROPER emphasised the value of blood-sugar curve estimations as a guide not only in lesser or occasional forms of glycosuria, but in severer forms of true diabetes, where they are a gauge of the results obtained by dietetic treatment. He also showed charts illustrating the altered ammonia coefficient and the importance of accurate knowledge of the degree of acidosis present. Protein and fat restriction had to be as carefully considered as carbohydrate restriction in successful dietetic treatment. Different methods of arriving at a standard diet after abolition of the glycosuria by fasting were described, though as long as effective treatment remained as at present simply dietetic many disappointments in results must always be inevitable. Administration of alkalies appears to be of very limited value whether in acidosis or in coma.

The PRESIDENT commented on the fallacies which so frequently arose through the Fehling reduction test.

Dr. W. GORDON compared the hopeless condition of the young diabetic of earlier days—with rapid progression towards the stage of coma—with the effects now observed under the Allan and other enlightened treatment. There were often, however, cases where we found ourselves between the alternatives of starvation and coma. He had seen a recent young case where glycosuria, obviously related to a continuous surfeit of loaf sugar, had cleared up altogether. He had also seen good results from salicylate of soda in the glycosuria of the young. The insulin treatment must yet be considered with reserve and he deprecated the publicity given to it in the daily press.

Dr. B. COHEN raised a question as to the dieting of a diabetic affected with pulmonary tuberculosis.

Mr. A. L. CANDLER quoted a striking case of septicæmia arising from a wound in the foot where the glycosuria and acetonæmia had tended to disappear after amputation of the limb.

Dr. P. D. WARBURTON said that acidosis became negative on the advent of diabetic coma.

Dr. H. JONAS mentioned the importance of glucose injections as a prophylactic against the toxæmia and jaundice arising from salvarsan injections.

## ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

A MEETING of this Society was held on Feb. 16th, when Dr. J. FERGUSON SMITH made a communication on

*Some Points in the Ætiology of Eczema.*

The conclusions arrived at were: 1. The skin of eczema patients is not abnormally sensitive to all irritants. 2. The skin of a patient, or an experimental animal, sensitised to a protein, is not more sensitive to a non-specific irritation than that of a normal person or animal. The sensitiveness is specific. 3. Attention was drawn to an important class of case in which eczema appears to be due to sensitiveness to skin bacteria.

Dr. IVY MACKENZIE made a communication on Psychotherapy and the Orthopædic Problem.

# Reviews and Notices of Books.

## ORAL ROENTGENOLOGY.

A Roentgen Study of the Anatomy and Pathology of the Oral Cavity. Second edition, revised and enlarged. By KURT H. THOMA, D.M.D., Assistant Professor of Oral Histology and Pathology and Member of the Research Committee, Harvard University Dental School. London: Henry Kimpton. 1922. Pp. 341. 30*s*.

THIS is an instructive book. The full description of the operative and pathological conditions of the cases quoted, as well as the clear account of technical procedures, make it of great practical value. It is divided into six parts. Dr. Thoma starts with an account of X rays apparatus and different forms of tubes. The interrupterless transformer is well described and reference is made to the efficiency—although limited—of the special dental X rays outfits now on the market. In the next section, on Application of the Rontgen Rays, the author deals first with the protection of the operator and patient, and then describes the technique of dental radiography, adding a useful exposure table. In discussing intra-oral films, he explains at some length, with excellent illustrations, the angle at which the rays should be directed so as to avoid distortion. The student reader should give this description especial attention.

The method for obtaining extra-oral radiographs is next given and their advantages are discussed, but the technique described for taking the sinuses would, we think, lead to much discomfort to the patient; this is a factor of importance, because if a patient is not comfortable he cannot keep still for any length of time. The value of stereoscopic radiographs makes no strong appeal to Dr. Thoma, who considers the "two position" method as sufficient in most cases. He gives some space to stereoscopic intra-oral films; the value of these we consider doubtful owing to their smallness and consequent paucity of objects, an objection which does not occur with extra-oral plates. A chapter is devoted to development of films, while another most useful one deals with causes of poor results.

Part II. is devoted to Interpretation. The author recognises the importance of the clinical conditions and approximate age of the patient being borne in mind when making a radiological diagnosis. In the chapter on Misinterpretation several common fallacies are pointed out. We should have liked to have seen more space devoted to the Rontgen appearance of teeth and jaws during development, although the illustrations and their descriptions are certainly helpful. The radiographic appearances of normal adult jaws and teeth are well defined and copiously illustrated. Part III. deals with Rontgenographic Study of Normal Oral Tissues in all stages of development. Part IV., on Rontgenographic Study of Pathological Oral Conditions, consists of 155 pages and deals first with abnormal dentition in its various forms. Diseases of the hard tissues of the teeth and of the dental pulp and their sequel, peri-apical infection, are adequately dealt with; the author emphasises the value of the X rays (p. 165) in the detection of the chronic blind abscess now recognised as being such a fruitful source of systemic infection. The nomenclature used in this book is, we must observe, different from that used in the United Kingdom; this is especially noticeable in the chapter on Periodontoclasia, defined as pathological changes causing destruction of supporting structures of the teeth. The statement in the chapter on Diseases of the Maxilla and Mandible that necrosed bone is recognisable in radiographs by its irregular outline should be limited only to necrosis when it is sequestrated; otherwise the condition is not possible to demonstrate by the X rays, although it may be apparent clinically. The illustrations of cases of osteomyelitis are very interesting. Dr. Thoma considers dental infection the most frequent cause of antral trouble: in this country there are many who consider infection from the frontal sinuses to be the most frequent cause. As to dental cysts invading the maxillary antrum, in our experience it is frequently difficult to discern in a radiograph where the one begins and the other ends. Part V. of the book is devoted to an excellent exposition of the use of Rontgenograms as an aid in treatment. Under the heading Apicoectomy, the author suggests that after this operation has been performed radiographs should be taken from time to time to watch the process of repair, and a series of radiographs of cases is given. With this suggestion we quite agree, but would go further and suggest that a definite line of research be made of the healing that takes place, in the interests of conservative dental surgery. With the instructions on examination of the oral cavity in Part VI. we concur, also with Dr. Thoma's view as to the importance of a careful and more thorough examination than is usually made.

We can confidently recommend this book to all interested in this valuable branch of modern science.

## STERILITY IN WOMAN.

Its Causes and Treatment. By ROBERT A. GIBBONS, M.D. London: J. and A. Churchill. 1923. With 44 illustrations. Pp. 244. 12*s*. 6*d*.

Dr. Gibbons has already established a claim to be regarded as an authority on the subject of sterility, and this work will strengthen that position. It is written clearly and should make a special appeal to the general practitioner. The book is divided into six chapters of which the first deals with sterility and the State. It begins with definition and classification, and the author defines sterility as "the inability of a woman to bring forth living children." This is hardly a satisfactory or even an accurate definition; it implies that a woman who has had half a dozen still-born children is sterile. A truer definition of sterility would be failure to conceive on the part of a woman who has had sufficient opportunity therefor. Certain formal defects in the method of classification of the causes are also apparent, but they do not impair the practical value of the book, except in so far as a careful systematic investigation of causation may be necessary in a given case before treatment is undertaken.

The section on sterility and the State is one of the most stimulating in the book. The author advocates several measures which would hardly meet with general acceptance at the present time; for example, notification of venereal disease, the production of a certificate of health as a necessary preliminary to marriage, and the sterilisation of those who are physically or mentally unfit to beget healthy children. Dr. Gibbons utters a solemn protest against the prevalent indiscriminate practice of birth control. Chapter 2 is a clear exposition of the anatomy of the pelvic organs and the physiology of conception, and contains also a summary of the causes of male sterility. Chapter 3 deals with the structural causes of sterility. In discussing the relation of fibroids to sterility the author draws attention to the frequent association of uterine fibroids with tubal inflammation. Among other useful information on functional sterility there is a good summary of recent work on the effects of diet, and of Prof. Arthur Robinson's valuable investigations on prenatal death. Such slender information as we possess on derangement of endocrine organs is also included. Chapter 5 is on medical treatment. It contains a section on "induced sterility" in which the author gives a thoughtful account of the effects of purposeful interference with the normal marriage function based upon his wide experience. The practitioner will find many useful suggestions in this chapter. The last chapter is devoted to operative treatment and most of it is sound. We are disposed to take exception to the recommendation of Pozzi's operation for "pin-hole" os: the result resembles too closely the effect of a bilateral tear of the cervix. A thorough dilatation

nearly always answers the purpose; and if some form of plastic operation is required, Dudley's method is better. Conservative procedures on the tubes are fully described. For fibroid tumours of the uterus, the author leaves the impression that conservative myomectomy has a very restricted field, whereas this operation is in fact the practice of many well-known gynæcologists in women under 30, when surgical treatment is required. Cæsarean section comes in rather quaintly among operations for the cure of sterility.

We can heartily recommend this useful and well-written book.

PATHOLOGY.

*Traité de Pathologie Médical et de Thérapeutique Appliquée.* Par EMILE SERGENT, L. RIBADEAU-DUMAS, L. BABONNEIX. Vol. XIII.: Reins et Organes Génito-Urinaires. Paris: A. Maloine et Fils. 1923. With 61 figures. Pp. 891. Fr.35.

THIS volume is divided into three sections, of which the first, written by MM. M. A. Brault, M. J. Cottet, and E. Michon, deals with the anatomy, physiology, and diseases of the kidney; the second section, contributed by MM. M. A. Louste and H. Lemaire, includes diseases of the genital organs; the third section, by M. R. Hazard, deals with analysis of the urine. The authors succeed in giving an admirable review of modern French thought and work on diseases of the urino-genital system. The student of medicine will find the treatment of the several subjects somewhat discursive; there is, moreover, a lack of exact clinical description and scanty reference to work done in other countries. No references to publications are given. The section dealing with Bright's disease is the most important since it ably summarises the work of the French school on the chemical pathology of renal disease. A strong effort is made to classify nephritis in terms of functional derangement in place of structural change. Retention of chlorides and nitrogen are discussed at length, and methods of testing renal function are well described; the treatment of the subject on these lines fails to carry conviction only because so little is yet known of the physiology of the kidneys. The treatment of the several diseases and clinical conditions is well given and concisely stated. The last section of the book dealing with analysis of urine is perhaps the best. It is well arranged and contains a great deal of exact information.

PSYCHO-ANALYSIS.

*Our Unconscious Mind and How to Use It.* By FREDERICK PIERCE. London: Kegan Paul. 1922. Pp. 323. 10*s.* 6*d.*

Mr. Pierce is energetic if unscientific; he turns psycho-analysis into a business proposition. Control and operation of the will; raising successful children; growing abler instead of growing older; setting the unconscious mind at work; a business organisation that will get more done—these are some of his aims, and he has no doubt whatever how they may be achieved. To the victim of smoking who cannot stop the habit, he begins an address with: "What is to be done? First there should be a searching and honest analysis of every important instance of wavering resolution; the opposed wishes should be examined by association until all of their elements are revealed. This will sometimes lead to surprising discoveries; so much the better. Knowledge is the first step toward resolving a conflict" (p. 64). Auto-suggestion is also a strong line: you get into a proper state of mind and select a goal "which is practical and which will harmonise with a basic wish of the Unconscious." If you have any trouble in finding such a wish, the book will direct you. Endocrinology, too, seems a good seller: "pituitary variance and adrenal insufficiency" is a frequent diagnosis that admits of no doubt and apparently needs no explanation, whilst pathological lying and stealing sometimes need correction of the pituitary or thyroid, which "may result in a tractable, happy child, with fine mental ability" (p. 151). The final chapter on "The New Psychology in Selling" tells the salesman how to guess the soft side of a flinty customer, and warns him not to try to sell his wares to the husband when he should have sold them to the wife.

Efficiency is a good motto, but the old-fashioned reader is likely to be alarmed at the prospect of forcefulness and uplift offered by this book.

INFANT FEEDING.

*Feeding, Diet, and the General Care of Children.* By ALBERT J. BELL, A.B., M.D., Assistant Professor of Pediatrics in the Medical Department of the University of Cincinnati; Attending Pediatrician to the Cincinnati General Hospital. Philadelphia: F. A. Davis Company. 1923. Pp. 276. $2.00.

This little book is written for the mother and trained nurse. The sections are well arranged, and paragraphs and the use of bold type simplify reference. Feeding tables are given and can be easily understood. The author recommends four-hour intervals for feeding, and increases with age the concentration of cow's milk in his milk mixtures. He is, on both these counts, at variance with some English authorities. We question the safety of advising two quarts as a suitable quantity to give an infant as an enema, and also the necessity for directions as to catheterisation. On p. 132 it is recommended that the daily evacuation of the bowels should be obtained before a meal, which seems hardly physiological.

The book is written with understanding, and should prove useful to nurses and educated mothers, working under the direction of a physician, provided the latter agrees with the author as to methods of milk dilution.

*Principles and Practice of Infant Feeding.* Third edition, revised and enlarged. By JULIUS H. HESS, M.D., Professor of Pediatrics, University of Illinois College of Medicine. Philadelphia: F. A. Davis Company. 1922. Pp. 496. $4.

IN this volume, which is the third edition of Dr. Hess's work, some of the chapters have been rewritten, and new chapters on rickets and spasmophilia are added. After a short account of metabolism in the infant, the author deals with nursing and artificial feeding in two chapters. Principles are enunciated upon which the diet is to be arranged, using the calorie requirements of the infant as a basis. Nutritional disturbances are discussed under a classification modified but definitely following Finkelstein. Intraperitoneal saline is recommended in anhydræmic conditions as the most suitable method of supplying fluid. The chapters on rickets and scurvy give an account of recent work on the subject, but English workers are rarely quoted. The subject of anæmia is dealt with too briefly to be of real value, and would anyhow seem out of place in a work on infant feeding. We cannot agree with the author in his statement that congenital pyloric stenosis is a frequent form of obstruction, nor in his consideration of the condition as a minor disturbance. But apart from these points the book is a valuable one.

THE ELEPHANT MAN AND OTHER REMINISCENCES.

By Sir FREDERICK TREVES, Bart. London: Cassell and Co. 1923. Pp. 222. 7*s.* 6*d.*

ANYONE who has worked for years in a great hospital must have accumulated a store of facts dealing with various aspects of human nature in which the pathetic and the comic are intimately blended. Few, however, put their recollections into print, and still fewer could do so with the blend of humour and charity which characterises Sir Frederick Treves's present book. The first paper, which gives the title to the volume, is a story of one who was sorely tried and who might have said in the words of the Psalms, "I am become as it were a monster unto

many; but my sure trust is in thee." John Merrick was afflicted with a hideous deformity affecting both the osseous structures of his head and face and also the skin of his body. How he came under the charge of Sir Frederick Treves must be read in the book; suffice it to say that when he did so he was barely human, more like a hunted and frightened animal. For years he had been turned over from one showman to another to be made a gazing stock and a mockery, and his case was all the more sad in that he was in no way imbecile, but intelligent and conscious of his unhappiness. After he had found an asylum in the London Hospital his one fear was that he should be moved on somewhere else, for his life had been hitherto spent in transference from one showman to another. His pathetic appeal to Sir Frederick Treves was, "When I am next moved can I go to a blind asylum or a lighthouse?" In the former, though in company with his fellows, he could not be seen; in the latter, "a lonely column of stone in the waste of the sea," there would be no one to see him. We should add that we have received a cutting from *The World's Fair* for Feb. 24th containing a letter from Mr. Tom Norman, one of the showmen who had "a business interest in Joseph Meyrick (not Merrick)"; he says that Meyrick was only on exhibition for about 30 months, and never in a caravan. Many of the other chapters are well worth reading; the second episode in that entitled "Two Women" is one more example of the devotion shown by women to the men to whom they are bound by regular or irregular ties. Such devotion is often found in real life and forms a stock situation in fiction.

## JOURNALS.

JOURNAL OF PHYSIOLOGY. Vol. LVII. Nos. 1 and 2. Among the papers in these numbers of the journal are the following: The Metabolism of the Salivary Glands, by G. V. Anrep and R. K. Canaan. The previous investigations on the blood-sugar metabolism of these glands showed that the resting gland consumes blood-sugar at a fairly constant rate and that this rate is greatly increased under the influence of pilocarpine—the increase being in broad proportion to the activity of the gland as measured by the flow of saliva. The authors find that changes in the blood flow through the gland do not affect the consumption of sugar from the blood, and that stimulation of the chorda tympani increases the blood-sugar consumption. The increase is of the same order as that of the gland secreting under pilocarpine, and is broadly proportional to the activity as measured by the rate of secretion. The maximal consumption of sugar corresponds with the maximal secretion and does not occur, as does the oxygen consumption, in the post-active period. Atropine in doses sufficient to paralyse the secretion only reduces the effect of the chorda tympani on the sugar consumption. Large doses abolish the effect altogether. As regards the reducing substance of the submaxillary gland, Anrep observes that mucin is the chief product of the synthetic activity of this gland in the dog and is the main form in which nitrogen is excreted by the gland in activity. Mucin contains in its molecule a reducing substance—glucosamine—and can be traced not only by the nitrogen determination but also by its reducing substance which it yields upon acid hydrolysis. It was found that the gland loses the same amount of reducing substance as is secreted in the saliva.—On the Nature of the Sugar in Blood, by L. B. Winter and W. Smith. The authors describe their method whereby the sugar of blood can be obtained in a concentrated solution free from proteins, and it is shown that the sugar in normal blood of man, and of the ox, sheep, cat, and rabbit is an unstable form of glucose, with an initial low rotatory power. It is suggested that the sugar is $\gamma$ glucose. Glucose and fructose taken in large quantities per os could be detected as such in the blood, their conversion into normal blood-sugar being very rapid. Nervous influences alter the nature and quantity of the blood-sugar. The blood-sugar of persons suffering from severe diabetes mellitus is of an abnormal nature. It appears to be $\alpha$, $\beta$ form of glucose. An enzyme is postulated, whereby the $\alpha$, $\beta$ equilibrium form of glucose is converted into $\gamma$ glucose. This enzyme is absent from the blood. The absence or inactivation of this enzyme is suggested as the cause of diabetes.—Respiration and Circulation in the Cat, more especially as to the Oxygen in the Venous Blood of the Resting Animal, by K. Uyeno and Y. Doi. The authors find that in any given vein the percentage saturated with oxygen varies widely; it varies independently in different veins in apparently similar conditions of urethane anæsthesia, and it bears no relation to the blood in the right ventricle.—Circulation After Cessation of Work, with some Remarks on the Calculation of Circulation-rate Experiments according to the Nitrous Oxide Method, by J. Lindhard.—Season Variation in the Reticulated Corpuscles in Amphibian Blood, by J. M. P. Scott. The blood of the frog and toad shows a high proportion of reticulated cells in late summer, which persists for some time. In late spring and early summer prior to the crop of new reticulated cells, the proportion of reticulated cells falls to a minimum. The majority of red cells of the frog and toad pass through their complete cycle in the course of a year.—Chlorine Interchange Between Corpuscles and Plasma, by Lucien Dautrebande and H. Whitridge Davies. In all the experiments normal human blood was used, clotting being prevented by the addition of a constant small amount of neutral potassium oxalate (0·1 per cent.). In all the experiments with carbon dioxide and with other acids, the blood was fully oxygenated. The authors' results with $CO_2$ are in accordance with those of previous observers. With constant partial pressure of carbon dioxide, reduction of hæmoglobin produces no chlorine transference. Acids other than carbonic acid, whether added to the blood in vitro or produced in vivo, do not of themselves cause any chlorine transference unless they be present in quantities sufficient to neutralise the whole of the bicarbonate reserve. Experiments with severe muscular work appear to indicate that chlorine transference may occur not only for the regulation of the blood alkalinity, but also possibly to maintain the normal osmotic pressure in the plasma.—Calibration of the Reversion Spectroscope for the Estimation of CO in Blood; and on Visual Acuity and the Resolving Power of the Eye, by H. Hartridge. The author deals successively with the histological and optical limits to resolving power, visual acuity for contours, the relation between the form and position senses and visual acuity, the difference threshold of the foveal cones for light intensity and factors affecting the difference threshold for light intensity.—The Relation between the External Work Produced and the Time Occupied in a Single Muscular Contraction in Man, by Hartley Lupton. It has been shown experimentally that the maximum work done in a single muscular contraction in man depends in a simple exact manner upon the mass moved or upon the time occupied in the movement. The author's experiments show that rapid movement means large internal friction and large loss of energy as heat, the external work produced by the muscular contraction being thus considerably less than the original potential energy possessed by the muscle. In the muscles of the human arm a movement completed in one second wastes 26 per cent. of its energy in overcoming the frictional resistance of the muscle itself, a movement completed in half a second some 52 per cent., until in a movement completed in about 0·26 second no external work can be done at all. Yet the movements of the wing muscles of insects are enormously more rapid than this. Presumably the structure of the insect's muscle is modified in some way to allow those movements to occur without the extreme wastefulness associated with rapid movement in man.—On the Concentration of the Blood and the Effects of Histamine in Adrenal Insufficiency, by C. H. Kellaway (see annotation, p. 556).

# THE LANCET.

*LONDON: SATURDAY, MARCH 17, 1923.*


## IS INFANTILE DEATH-RATE SELECTIVE?

> "We may regard the weight of present evidence as altogether preponderant in favour of the view that the death-rate of the earliest period of life is selective—eliminating the weak and leaving the strong."

THIS dogmatic statement appears in Prof. RAYMOND PEARL'S recent monograph on the "Biology of Death," and we turn with interest to the evidence on which this statement is based. It is a statement which has important bearings on the value of maternity and child welfare work in this and in all countries; and it has at the same time a bearing, to use again Prof. PEARL'S words, upon "a great deal of the public health propaganda so loosely flung about." It is common ground that the inheritance factor is of prime importance in determining the length of the life span. In some families longevity, given satisfactory methods of life, is the rule; and even unsatisfactory methods of life are less potent in shortening life than when indulged in by others without the same happy heredity. But the question remains whether in the first two years after birth environmental factors are to be regarded as relatively insignificant compared with inherited capacity for life. To take concrete examples, is the 24 per cent. excess of mortality of infants in the urban districts of England in 1920 over that in rural districts due to inherited superiority of the rural population or to differences of environment or to both? Similarly, to what are we to ascribe the fact that in county boroughs in the north the infant mortality is 46 per cent. above and in county boroughs in the south of England it is 35 per cent. below the average for the entire country? Or if we take the infant death-rate per 1000 births within the first month after birth, why is this only 19 in Oxford and 56 in Barnsley? Can selection account for these differences; or may we not rather conclude that selection, to the extent to which it does act, is a force of not greatly dissimilar quality in different parts of the country, and perhaps also in different social strata of the population, and that the greater part of the serious discrepancies in infant mortality is due to differences in total environmental circumstances? The range of operation of environment on the human organism is seldom adequately visualised, and especially the extent to which infection and defects of nutrition influence mortality, whether occurring in ante-natal or post-natal life.

The acute discussion on this problem dates from the appearance of the first report on infant mortality issued by the Local Government Board in 1910 (Cd. 5263). This report, written by Dr. ARTHUR NEWSHOLME, then Principal Medical Officer of the Board, gave as one of its main conclusions that "the continuance of a high infant mortality in a given district involves the continuance of a centre of national weakness"; and that, "without attempting to settle the moot point as to whether a heavy infant mortality has any selective influence on the population surviving after infancy, in actual experience the effect of any possible natural selection is most effectively concealed by evil environment which causes the hypothetically stronger survivors to suffer from excessive mortality in youth and adolescence, so far as they can be traced." In this conclusion, which points to the supreme importance of environmental reform, no separation could be made between groups in the same population exposed respectively to low and to high infant mortality and severally traced in later life. But so far as the data went they established the conclusion that "a high infant mortality implies a high prevalence of the conditions which determine national inferiority." Dr. E. C. SNOW, one of Prof. KARL PEARSON'S students, investigated the problem further, attempting to trace infants born in a single year through successive years. He employed the method of partial correlation, a method on the merits of which biometricians appear to be violently divided. Using English and Prussian statistics, he found negative correlations between the death-rate in infancy and in successive years of life, which is consistent with the conclusion that mortality in early life is selective. Although environmental evils in many areas "account for much," he concludes that "the more children who die below the age of 3 years, the healthier the next five years of life." At this point the controversy was taken up by Dr. JOHN BROWNLEE in a paper on the Relation of Infant Mortality to Mortality in Subsequent Life.[1] He indicated that Prof. PEARSON, who had emphasised and extended Dr. SNOW'S conclusions, had employed a method of investigation considered by Dr. BROWNLEE to be "fundamentally fallacious," that the epidemiological aspect of the statistics had been neglected, and that in fact when other data were employed the negative correlation found by Dr. SNOW became a positive correlation! It is not surprising in view of these discrepant results that Dr. BROWNLEE regards partial correlation coefficients as a labyrinth without a clue. He concludes that full inquiry throws doubt on every method which has been proposed to measure the influence of the death-rate as a selective agent.

The death-rates in infancy which we have quoted, with their enormous range, justify the welfare work which has been one of the most important recent developments in public health activities. These ranges of mortality cannot be satisfactorily explained on the hypothesis of natural selection. Areas of excessive and of low infant mortality stand in proximity to each other, in different towns, in town and country, in different wards of the same town, in neighbouring streets. To refer these differences of mortality and of accompanying damage without death, entirely or chiefly to initial faults of parent age is unjustified by the facts; and is, furthermore, disproved by the immense improvements in infant mortality generally and in the special areas in which infant mortality was excessive and in which intensive child welfare work has been done. Prof. PEARL informs us that "happily" PEARSON'S and other results showing selective death-rates have been amply confirmed. Were this so the "happiness" of a multitude of medical and social workers would be sadly diminished; but for the present they can confidently pursue their important work, in the conviction that by so doing they are doing more for the up-building of race improvement than is practicable on any other lines.

[1] Jour. Roy. Statist. Soc., March, 1917.

## THE SURGICAL TREATMENT OF SPASTIC PARALYSIS.

THE discussion on spastic paralysis and its surgical treatment at the meeting of the Section of Orthopædics of the Royal Society of Medicine, of which a report will be found on p. 537, deals with an important and difficult subject. The treatment of this disability has always presented and still presents great obstacles to success. In most other conditions which the orthopædic surgeon is called upon to treat he has to deal with deformities and disabilities in the cure of which he may reckon sooner or later on the coöperation of the patient. In infantile spastic palsy, unfortunately, the defect in the upper motor neuron is accompanied in the vast majority of cases by defect of the higher cerebral centres, and the mental condition varies in any series of cases from normal intelligence to complete idiocy. It is obvious that it is of no use to remove the physical obstacles to the normal use of the limbs if there is not enough intelligence to direct their movements. This is well recognised, and Mr. BLUNDELL BANKART and the other speakers at the meeting were all agreed on this point.

Spastic infantile paralysis was first brought to the notice of the profession in 1843 and again in 1861 by Dr. W. J. LITTLE, who, at the later date had seen and treated some 200 cases. At that time and for long after the treatment consisted of exercises, manipulations, retentive appliances, and tenotomy of contracted tendons, but not many surgeons, it is to be hoped, emulated JULES GUERIN, who declared that at one sitting he had divided 60 muscles and tendons. Until some 14 years ago little or nothing had been done to attack the problem on its neurological side. In 1909 FOERSTER and KUTTNER, of Breslau, applied to the relief of spasm Abbe's operation of division and resection of posterior nerve roots, which had previously been used to relieve severe pain. By thus breaking through the reflex circle, spasm could be abolished. They published a number of brilliant results—so brilliant as to appear almost incredible. British surgeons who followed their methods did not obtain like successes and this method of treatment was soon abandoned, to be remembered as a glaring example of the untrustworthiness of a certain kind of medical and surgical "boom." The method described and advocated by Mr. BANKART is that popularised by STOFFEL, who made use of the anatomical fact that the motor nerves to muscular groups, or even to individual muscles, may be distinguished as separate bundles in the main nerve-trunks for a considerable distance above the points where they diverge. Here they may be singled out and, after electrical proof of identity, divided in whole or in part according to whether it is thought necessary to paralyse a muscle entirely or only to do so partially. By this method the reflex circle is broken on its efferent side. Of late years orthopædic surgeons have put forth determined efforts to get rid as far as possible of cumbrous retentive appliances, representing a sore burden on locomotive systems which are already damaged. Mr. BANKART claimed as one of the merits of Stoffel's operation that it did away with or at least minimised after-treatment and the use of walking apparatus, and although his claim was not allowed in full by other speakers, it was generally admitted to be sound.

In the ensuing discussion the President, Mr. T. H. OPENSHAW, and others who had no personal experience of Stoffel's operation, expressed themselves as not opposed to it, while those surgeons who had experience of the method were in favour of its adoption in appropriate cases for the lower extremity, although they generally expressed the opinion that it could not entirely displace older methods such as lengthening of the tendo Achillis. A consensus of opinion was unfavourable to the operation in the upper extremity, where the resulting paralysis was held to be a drawback. Excision of the tendon and transfer-transference were preferred as giving better functional and equally good æsthetic results. Everyone present recognised, however, that the functional success of any treatment depended very largely on the mentality of the patient. No one had a word to say in favour of Foerster's proceeding, which its author himself is said to have now abandoned. The neurologists who took part in the discussion spoke favourably of Stoffel's operation and welcomed the abandonment of posterior root-section. Experience shows that relief of spasm and the consequent development of powers of locomotion is an end not only to be sought after for itself, but also because of its apparently beneficial effect on the mental condition in many cases. We say apparently, because it is difficult to decide how much of the mental improvement is due to natural, if delayed, cerebral development as the child grows older, and how much to the improved condition of the locomotive apparatus, due to surgical treatment. Some distinguished orthopædic surgeons in this country and America attach very great importance to what is not very aptly called re-education. Their views were scarcely represented in the discussion, although everyone must admit that training in the use of the limbs which have been liberated from the tyranny of spasm has its place in the after-treatment. The parents and friends of these children, even of those of very low mentality, are in general very much attached to them, sometimes lavishing more tender affection on them than upon their normal brothers and sisters, and they frequently hold pathetically optimistic opinions as to their mental capacity. They highly value every improvement, however small, and it becomes the duty of the surgeon not to neglect any means of amelioration and not to pronounce any case as hopeless until he has given it most careful and prolonged consideration. The Council of the Section of Orthopædics is to be congratulated on having arranged for the discussion of this subject, which alone would be enough to justify the comparatively recent conversion of the subsection into the present vigorous and flourishing section.

## BOTULISM: A RARE DISEASE.

IN the process of transition from a purely clinical to an ætiological classification of any group of diseases a stage must be reached where the newer method of division overtakes and cuts across the older, while neither can stand alone. For a time our concept of a disorder vacillates between that of a clinical syndrome not necessarily referable to one organism, and that of a specific infection or intoxication produced by a known virus. The definition of some diseases is already crystallised; for example, diphtheria takes its place as a specific invasion by the Klebs-Löffler bacillus; but, on the other hand, disseminated sclerosis suggests only a complex of nervous and mental symptoms, and the same may still be said even for some pathological states, such as general paralysis of the insane, of which at least the remote ætiological

factor is accepted. When the necessity arises to determine the nature of diseases of a more or less unusual incidence, because the origin of a symptom-complex may be of vital import to the community, any ambiguity in classification that may lead to confusion must be strenuously fought. A notable example is the misapplication of the term "botulism" to numerous cases exhibiting miscellaneous encephalic symptoms thought to present a clinical picture, without regard either for the history or specific ætiology of the cases. Dr. W. G. SAVAGE in the third of the Milroy Lectures, which we abstract on another page, goes so far as to say that, so far as he can trace, the Loch Maree outbreak [1] is the only outbreak of botulism which has occurred in England. In a review of the subject in the current issue of *Medical Science, Abstracts and Reviews*, it is pointed out that while the classical picture presented by victims of botulism, especially the persistent ophthalmological symptoms combined with a normal disc, and the absence of fever, tend to make it a nosological entity, the differential diagnosis is not easy. Poisoning with certain plant alkaloids, particularly belladonna, on the one hand, and asthenic bulbar paralysis on the other, present real puzzles in differentiation. In fact, the most certain guide to diagnosis is the evidence of food poisoning in individual cases and that of commensalism in an outbreak.

From an analysis of several cases in a proved outbreak of botulism two points stand out: firstly, that cranial-nerve paralyses are constant symptoms; they frequently precede the gastric symptoms in food poisoning from this cause, and they may constitute the whole clinical syndrome. Secondly, the time of onset of symptoms varies to such an extent that the poisoned individuals may scatter widely and the presence of an outbreak may escape recognition. Though it is by serological means that the diagnosis is most definitely established, in practice successful treatment by antitoxin depends mainly upon early clinical diagnosis. Confirmation of the contamination of the suspected foodstuffs is important, as is also the establishment of the particular type of toxin responsible for the symptoms. There appears to be no doubt as to the therapeutic value of the serum if administered early, and thus a supply of a polyvalent antibotulinus serum should be readily available for distribution.

The increase in the recently reported cases of food poisoning in America has been explained by the fact that as a result of the world's shortage of food, the Federal authorities have been urging the necessity of canning fruits and vegetables at home. It is suggested that home canning cannot be as effective as that undertaken commercially, and that spores which do not escape professional handling may resist the efforts of the amateur; tests undertaken by E. C. DICKSON and others appear to confirm this possibility. Dr. SAVAGE states (p. 529) that in 84 outbreaks of botulism in the United States and Canada, all derived from canned or bottled foods, comprising 319 cases with 206 deaths, 52 were from home and 31 from commercially canned foods, 1 being doubtful. The toxins or bacilli are easily killed by heat, but the spores of *B. botulinus*, which are even more prevalent in virgin than in cultivated soil and may gain access to canned foods, are exceptionally resistant. However, he concludes that the risk of botulism from canned foods, though a real, is a very small one, and with added care can be still further diminished.

[1] THE LANCET, 1922, ii., 522 and 534.

# Annotations.

"Ne quid nimis."

## AN EXPLANATION OF THE HOUSING PROBLEM.

RECENT political events have again underlined the importance of the housing problem. There is no need to emphasise in these columns the vital connexion between housing and public health; the latter, whether physical or moral, is perhaps more dependent upon good housing than upon any other single factor in national affairs. Apart from the medical aspect of the problem, those who wish to consult a compact and authoritative account of the present position with regard to housing will find it in the typewritten *Monthly Record* of the National Housing and Town Planning Council, dated Feb. 23rd. This account has been prepared for submission to Members of Parliament; it discusses five definite points concerning which housing reformers throughout the country are in substantial agreement. The first point relates to the value of the housing schemes already carried into effect by local authorities. The number of houses completed under these schemes approaches 200,000 (the estimated need in 1919 was half a million). It is stated that these houses are tenanted by those for whom they were built, precedence having been given in 90 per cent. of cases to families of ex-Service men. About 85 per cent. of these houses contain three bedrooms. The designs of the houses are defended; apart from complaints on points of minor detail, it is claimed, the tenants are satisfied and appreciative of their bettered dwelling conditions.

Reference is made to the auxiliary housing policy embodied in the Housing Act of December, 1919. Under the provisions of this Act subsidies have been given (in sums ranging from £140 to £260) for upwards of 40,000 houses built by private persons. In the general experience of local authorities, who have signed the certificates under which the grants have been given, it is undesirable that this method of stimulating house supply should be repeated. Subsidies have been secured for the building of houses under conditions which constitute a grave misuse of public funds. It is estimated that less than one-third of the houses thus built are tenanted by members of the working classes. It may be urged that they have supplied the needs of the lower middle classes, but it is claimed that this result can in the future be achieved under far better conditions by the amendment and extension of the provisions of the Small Dwellings Acquisition Act. The cost of building the houses completed under the main scheme is the second point discussed; the third deals with the annual loss likely to be incurred in the event of adoption of new schemes. The fourth point relates to the new policy of coöperation with the State which has now found approval with the leading local authorities; the fifth is devoted to a series of proposals relative to the amendment of the Small Dwellings Acquisition Act. The influence of the operation of rings and trusts, and the industrial building boom which absorbed the energy of the building trade from 1919 to 1921, are clearly described, and the necessity is made plain for a bridging of the gap between the rent-paying capacity of the ordinary working-class tenant, whose wage standards have been greatly reduced, and the charges to be met in housing him.

## THE TREATMENT OF PELIOSIS RHEUMATICA.

IN theory the choice of treatment should follow knowledge of ætiology of a disease. But it sometimes happens that a therapeutic bow, drawn more or less at a venture, adds to our knowledge of ætiology. This seems to have been the experience of Prof. E. Rautenberg [1] in his work on peliosis rheumatica, 23

[1] Deut. med. Woch., Jan. 26th, 1923.

cases of which he has treated in his hospital since 1915. As the name given to this disease suggests, its treatment has in the past been anti-rheumatic, and it has continued to be so, although the exhibition of salicylates and allied drugs has seldom had a prompt effect on the eruption, the sub-febrile temperature, the pain in the muscles, the swelling of certain joints, and the slight œdema of the skin often observed in this disease. Prof. Rautenberg's treatment is simple enough. He injects by lumbar puncture a local anæsthetic into the spinal canal, an average dose being 4 c.cm. of normal saline solution containing 0·5 per cent. novocaine. Under ordinary or expectant treatment with rest in bed, the rash takes at least a week or two to disappear, but after an injection of novocaine it often vanishes in a few hours, and never takes more than a day or two to do so. This phenomenon suggests that the rash is not due to actual extravasation of blood, but simply to distension of certain paralysed capillaries of the skin with blood. Microscopic examinations of sections of the skin by Dr. Walkhoff have shown dilatation of the capillaries, the lumen of which was not blocked by thrombi. There was also no sign of necrosis or proliferation of the endothelium; there was slight inflammatory œdema in the neighbourhood of the capillaries, the connective tissue being invaded by a serous effusion and numerous leucocytes. After giving detailed records of three cases in which the spinal injections afforded prompt relief, Prof. Rautenberg states that these were not specially selected cases, but that all the patients given this treatment responded in the same remarkable manner. He does not explain fully how he came to adopt this treatment, but he gives what appears to be a plausible explanation of its action. He thinks that the disease is not primarily peripheral; it is more likely that it begins as a lesion in the lower part of the cord, or in the cauda equina, and may be compared with the disease of the central nervous system which gives rise to herpes zoster. If this hypothesis is correct, the novocaine in the spinal canal may act by blocking morbid impulses travelling from the central nervous system to the joints, muscles, and skin, giving these structures a chance to recuperate. Prof. Rautenberg has given spinal injections of novocaine in certain other diseases associated with cutaneous eruptions, but with little success, and it would seem that such diseases as erythema nodosum, erythema exudativum multiforme, and the like, are in quite a different category from peliosis rheumatica.

## CONGENITAL MALARIA.

Dr. R. P. Forbes,[1] of the Department of Pediatrics in the University of Colorado School of Medicine, who records an illustrative case, draws attention to the rarity of intra-uterine infection with the malarial parasite. Beekel found only 12 examples of undoubted placental transmission of malaria on record up to 1910, one being under his own care, since when 15 more conclusive cases have been published. A summary of the reported cases shows, first, that all patients did not have symptoms when the plasmodia were found in their blood soon after birth, and, secondly, that symptoms appeared at various ages, the longest post-natal interval being seven weeks. A new-born child therefore may have a relatively latent type of malaria, and it is probable that some at least of the cases of malaria in infancy hitherto attributed to post-natal infection were in reality acquired in utero or at birth. Since malaria is common in pregnancy, while trans-placental infection is rare, it is rational to suppose that congenital malaria may depend on some abnormality or accident of delivery. Dr. Forbes's case occurred in an infant aged 7 weeks, who had been born at term after normal labour. She had six febrile attacks before the periodicity was fully appreciated, and the parents, who had been born in Greece, were questioned as to a history of malaria. The mother then stated that she had had an unusually severe quartan infection in Greece seven years previously, but asserted that she had been free of all symptoms before coming to the United States in 1916. Examination of the infant's blood at the time of the seventh attack showed large numbers of malarial plasmodia in all stages of the asexual life cycle. The spleen was palpable 2 cm. below the costal margin. The mother's blood at this time also showed quartan parasites, but her spleen was not palpable. Under treatment with quinine hydrochloride in doses of 2 gr., at first every four hours for four days, then three times daily for four days, and lastly three times a day on each of two days of each week for two months, the splenic enlargement subsided, the child gained in weight, and at the age of 6 months had been free from any symptoms of malaria since treatment had begun. In a malarial community such a case would invariably be regarded as an instance of post-natal infection, but as the anopheles mosquito has not been found in Eastern Colorado, where the case occurred, congenital infection seems to be the most likely hypothesis.

[1] American Journal of Diseases of Children, February, 1923.

## "PINS AND NEEDLES."

PRICKING, tingling, "pins and needles," a feeling "like an electric battery," or, in more technical language, paræsthesia, is a subjective symptom of interest and occasionally of interpretative difficulty. Probably best regarded as similar to pain but not of sufficient intensity to be so classified, though its severity may sometimes raise it to the pain level, paræsthesia is characterised rather by a diffuseness and complexity and often by a background of numbness which suffice to distinguish it clinically from the sensation of pain. In the simplest instances the phenomenon is caused by a milder stimulus than that occasioning pain; when the ulnar nerve is pressed on at the elbow tingling results, whereas a knock on it will produce pain; if one leg is crossed over the other, if the edge of a chair exerts pressure on the back of the thigh, tingling ensues in the peripheral distribution of the sciatic nerve, and the segment of the limb is often said to be "asleep" or to have "gone to sleep." Evidently, then, in such commonplace examples of the symptom we cannot be sure that the pressure exerted on the nerve trunk is not simultaneously interfering with the circulation through the arterial vasa nervorum of the peripheral nerve or through its venæ comites. For the interpretation of the clinical phenomena we believe this question of concomitant disturbance of nerve-trunk circulation to be of the first importance. One of the ordinary types of minor complaint, as seen in the out-patient department of a large hospital, is acroparæsthesia, a condition occurring with much greater frequency in women than in men and recognisable by its appearance in elderly hard-working people whose hands are often lined and cracked by scrubbing and cleaning and frequent immersion in water; during the working hours little is noticed, but as the hours of rest and sleep come on intolerable "pins and needles" develop in the periphery of the upper limbs, effectually interfering with the onset of unconsciousness and forcing the sufferer to seek relief in constant movement and change of position. Such patients nearly always show early signs of arterial degeneration, and it is a feasible speculation to associate the acroparæsthesia with incipient arterio-sclerosis of the vasa nervorum, a relative ischæmia of the nerve trunks from insufficient general circulation; once circulation is established by the ordinary activities of the day the paræsthesia disappears. The seemingly little recognised condition of "venous neuralgia" is noteworthy for insufferable paræsthesiæ and has been shown by Edinger to be caused, in the case of the lower extremity, by a varicose state of the venæ comites of the sciatic nerve and to be curable by appropriate measures for venous support. Other instances of paræsthesia derived from certain implication of the circulatory element will readily occur to the clinician. Thus the whole vast group of the vaso-motor neuroses—Raynaud's syndrome, acroasphyxia, acrodynia, erythromelalgia, perhaps also causalgia—constitutes

a class in which pain or paræsthesia, or both, cannot be separated in pathogenesis from symptoms definitely of vascular origin; nor in this connexion should intermittent claudication be forgotten. Again, paræsthesia is the usual accompaniment of any variety of neural infection, whether it amount to a structural neuritis or merely to a toxic state without objective signs. In any infective process invading the peripheral nervous system we cannot differentiate lymphogenous, hæmatogenous, or neural (parenchymatous) factors except by pathological investigation; clinically we do not know to which of these to assign the paræsthesia of which complaint may be made. General blood states, for example, pernicious anæmia, often induce peripheral paræsthesiæ; in the case of the disease known as subacute combined degeneration of the spinal cord both neural and circulatory elements may be at fault.

Study of the subject, then, indicates the complexity of the pathogenic process in so banal a complaint as "pins and needles"; we are to suppose that pressure, or circulatory disorder (arterial, venous, or lymphatic), or infection or toxi-infection (neuronal or vascular) in some fashion impairs neural conductivity; the result in consciousness is a state of numbness or of paræsthesia, or of both simultaneously, referred by the brain to the periphery of the particular nerve distribution involved. For the unravelling of any unusual case, therefore, due attention must be given to a variety of considerations, and detailed information obtained as to the behaviour of the symptoms under a variety of conditions.

## A REVIEW OF X RAY THERAPY.

Dr. Otto Strauss of Berlin has recently reviewed[1] the present-day position of the treatment of carcinoma with X rays. He traces the changes of ideas from those held during the early days of the application of X rays for the cure of malignant disease to our present-day conceptions and practice. At first it was generally believed that carcinoma cells could be destroyed by a strong dose of X rays, and that if it were possible technically to bring this dose to bear upon the deep-lying malignant tissue, all carcinomata would be within the range of cure. The whole question was thought to be well on the way of being settled, the only accessories necessary being the proper X ray tubes for giving the high dosage required. These were obtained, but the problem was then found to be complicated by the fact that the strong doses necessary to kill the carcinoma cells had a deleterious effect on the overlying normal tissues. This difficulty being overcome by the use of filters, carcinoma was promptly labelled a curable disease, the high dose being called the "carcinoma dose." Disappointment soon came, not altogether unexpectedly, for it was discovered that the hitherto unquestioned hypothesis of the uniform susceptibility of all carcinomata to X rays had not a shred of evidence to support it. The "carcinoma dose" disappeared, the high doses were diminished, and the view that small doses had a stimulating effect on carcinomata passed out of fashion as a grandmother's tale. It was decided that it was impossible to lay down the dose for any particular form of carcinoma. It was, however, found in practice that a great number of carcinoma uteri cases reacted regularly to a certain dose, and this dose has since been called the "carcinoma dose," recognising that the term has only a rough value. Although it has subsequently been found that other problems of an intricate and difficult nature are still to be solved, it must not be forgotten that real advance has only been made since a definite idea of a "carcinoma dose" has been fixed. In close connexion with the overthrow of the old "carcinoma dose" came a demand for a reduction in the strength of the dose. The reason for this was the observation that large doses were injurious to the natural resistances of the body. In course of time a certain conception of this "natural resistance" has been formulated, although in reality very little is known about it, and there has been much discussion about the spontaneous healing of carcinomata.

At this stage it was thought that the effect of the X rays was not on the carcinoma cells themselves, but rather on the surrounding connective-tissue cells, which were stimulated to activity and to proliferation so that they crushed the neoplasm out of existence. The connective tissue has come more and more to the forefront of the discussion. It used to be regarded as a by-product without much effect on the organism as a whole, but now it has been demonstrated that 16 per cent. of the adult body-weight is connective tissue, and that in no situation does a parenchymatous cell abut on a blood-vessel without a layer of connective tissue between. Further, since the importance of this tissue has been recognised as a water depôt, and a storing place for chlorides and fat, and since its significance has been pointed out for the maintenance of the H.OH group and for the formation of acids, our conception of its value has completely altered. In fact, connective tissue is an organ and must be treated as such. Experiments were now carried out to test the effects of the X rays on the connective-tissue cells, with the result that it was found that if with a certain dose they were stimulated to proliferate, their staining properties, chiefly of the so-called pyrrhol cells, were also enhanced. It was further observed, by means of their staining reactions, that there was a difference between the effect of the X rays on connective tissue and on parenchymatous tissue. Certain epithelial cells reacted three times more rapidly to the X rays than did connective tissue, so that by the time the latter had been stimulated, the former had already received an over-dose, and had begun to show signs of degeneration. Thus if less than such a dose was given, neither a degeneration of carcinoma cells was produced, nor was the connective tissue stimulated to destroy them; in fact, the carcinoma cells were rather stimulated to greater activity, and herein lay the danger of weak doses. In contrast to these observations Aschoff[2] showed that the effect of X rays was on the carcinoma cells themselves, and produced vacuolation of the protoplasm with alterations in and dissolution of the nucleus. A true metaplasia could also be produced. Strauss[3] too pointed out that if it were true that the chief effect of X rays was on the connective tissue, it would be expected that carcinomata of the scirrhus type would benefit most, but such has not been shown to be the case. Scirrhus carcinomata react badly to X rays. The action of the connective tissue has probably been overestimated, and if it were the chief factor in healing, spontaneous cure should occur much more frequently.

The view has been brought forward that large doses are injurious to the endocrine glands and as an explanation of the fact that X ray treatment has so little effect on carcinomata in the gastric region and in the head and neck, it has been suggested that large endocrine glands such as the spleen, pancreas, and suprarenals in the stomach region, and the parathyroids, thymus, and pituitary in the head and neck, come under the direct action of the rays and are so damaged that the general resistance of the body is lowered rather than raised. The case of the uterus is quite different, for in this region no large endocrine organs come under the rays, and it is well known that in the uterus the greatest benefit is obtained from the treatment. But how is the fact to be explained that carcinomata of the rectum do not react so favourably although there is equally no endocrine substance in the path of the rays? Among all the reasons given for a reduction in the dose of X rays, none seem to Strauss to be really substantiated, and he recommends the application of the large so-called "carcinoma dose." But he recognises that the question of dosage is very different when we are dealing, not with the

[1] Deut. med. Wochenschr., Nov. 24th, 1922.

[2] Münchr. med. Wochenschr., 1913, Nos. 7 and 8.

[3] Deut. med. Wochenschr., 1922, Nos. 12 and 13.

primary tumour, but with post-operative prophylaxis. In the former we are aiming at the local destruction of the tumour, but in the latter, apart from any small recurrences to be dealt with locally, we are seeking to increase the general resistance of the body. Whether it is or is not possible to obtain such a result is very questionable, for we must honestly admit that about carcinoma immunity we know practically nothing. The power, once so much under discussion, which the normal serum possesses of destroying carcinoma, and which is absent from the serum of those suffering from carcinoma, has not been definitely demonstrated, nor does the discovery of a specific destructive ferment for carcinoma-protein bring us much nearer to the goal. Some experiments carried out by Caspari[4] are suggestive. He found that if animals were inoculated with carcinoma cells after exposing them to the X rays, they were immune; that if they were treated with X rays before and after inoculation, the carcinoma grew, but only feebly; and that if they were X rayed only after the inoculation, the tumour grew and was even stimulated by the application. The explanation given was that a leucocytosis was produced by the X rays with subsequent cell destruction, whereby a hormone was poured out in the blood, rendering it immune. Leucocytosis would therefore seem to be important for increasing the immunity, but what sort of hormone is set free is for the moment beyond our power of ascertaining. Strauss thinks that it is certainly not produced from the connective-tissue cells, but is probably derived from the endocrine organs. It is necessary, therefore, in post-operative X ray therapy to seek to produce a leucocytosis, and it is well known that this can be achieved. It is also known that too large a dose will produce a leucopenia, while small doses, after a preliminary drop in the number of leucocytes, produce an increase.

Strauss comes to the conclusion that the dosage necessary for the treatment of a primary tumour and that necessary after operation must be quite different, and that up till now the mistake has been made of trying to combine two different aims under one rule. Whereas strong doses are necessary for the former condition, much weaker ones are needed to stimulate the resistances of the body, and he thinks it is probably the quality rather than the quantity of the dose that will have to be altered, before successful results will be obtained. He suggests that rays other than the hardest, such as are used for the removal of tumours, might be employed to produce post-operative immunity.

## PIONEERS IN LUNG SURGERY.

IN an article which appears in the present issue Dr. C. Riviere and Mr. W. H. C. Romanis give an account of the directions in which surgery is being invoked in the treatment of pulmonary tuberculosis, recalling the words of James Carson, of Liverpool, who, just over one hundred years ago, envisaged the cure of pulmonary tuberculosis by surgical operation. Last week Dr. J. J. Perkins and Dr. L. S. T. Burrell indicated the application of artificial pneumothorax to conditions other than tubercle. A fortnight ago we printed an obituary notice of Prof. Chr. Saugman, whose introduction of the manometer into the technique of artificial pneumothorax established this method as one of acknowledged value and safety. We have now to record the death of another pioneer, Dr. Lucius Spengler, of Davos, who was among the first to use Brauer's method of incising the soft tissues down to the pleura before insufflating gas with a blunt cannula. All the resources of the Schatzalp Sanatorium, and of a large private practice outside, enabled Spengler to accumulate a vast amount of information regarding the successes and the limitations of collapse therapy, and his experience is revealed in a series of exhaustive papers by Ludolf Brauer and himself which appeared about the year 1910 in the *Beiträge zur Klinik der Tuberkulose*. Spengler did not stop at blowing gas into the pleura, but, in the considerable proportion of cases where adhesions hinder effective collapse of the lung, he supplied a large part of the clinical material on which other methods such as thoracoplasty and decortication or pneumolysis were carried out, many of them at Davos, others in the Surgical Clinic at Zurich University which was then in Sauerbruch's charge. Spengler was widely known for his mature clinical judgment and his faculty of grasping the essential elements in the lives of his phthisical patients. The treatment of tuberculosis at Davos owes much to his life work, for he was one of the two sons of Dr. Alexander Spengler, the local practitioner in the Davos valley, who first called attention to the value of the alpine climate about 60 years ago.

[4] Zeitschr. f. Krebsforsch., 19.

## DISABILITIES OF SCHOOL AGE RESULTING FROM RICKETS.

THE crippling of school-children even in rural areas as a result of rickets occurring in early life is attracting the attention of county health authorities. Dr. H. P. Newsholme in his annual report as school medical officer to the North Riding of Yorkshire County Council details the results of an inquiry made during 1922 into the prevalence of rickety deformities and their effect on the capacity for education. The children were unselected except in regard to age; the majority were in the age-groups 5–6, 8–9, and 12–13 years, and 6566 boys and 6224 girls were examined. The deformities noted were classified into beading of the ribs, enlargement of the ends of long bones, bossing of the forehead, gross deformity of the chest, knock-knee, bow-leg, and deformity of the spine. One or more of these deformities was present in 3·9 per cent. of the boys and 1·7 per cent. of the girls—an average of about 3 per cent., the large excess in boys being almost wholly under the headings of beading of the ribs and deformity of the chest. Knock-knee, bow-leg, or spinal deformity was found in 0·7 per cent. of the children. These evidences of past rickets were not regarded as a measure of the prevalence of that disease, but only as an indication of the number severely affected. In 2934 instances inquiry was made of the parents as to whether any child in the family was known to have had rickets, with the following result: in the larger towns such a history was obtained in 7·5 per cent. of 1658 families, in the country towns in 6·5 per cent. of 553 families, and in the rural areas in 4·4 per cent. of 723 families, an average of 6·5 per cent. Dr. Newsholme thinks it would be unreasonable to imagine that the 3 per cent. of children of school age, showing deformities due to past rickets, were derived from a mere 6½ per cent. of cases of rickets in the child population. He concludes that the parents understated its prevalence in their families, not knowing that some ill-defined malady through which the child had passed was in fact rickets; and he thinks there is need of a general education of the public in the matter.

With remarkable uniformity the children of either sex who showed deformities due to rickets were found to be not so tall and not so heavy as the average for their age, this poorer physique continuing manifest throughout the whole of school life. Thus among 1986 boys of 8 years examined, those with evidence of past rickets were on an average 1·9 inches less in height and 4·3 lb. less in weight than those without rickety deformity. This harmful influence of rickets on physique is well known, but the association of rickets with educational retardation is not so generally recognised, and this is perhaps the most interesting of the observations in this inquiry. It was found that children showing the deformities specified were definitely backward in their education, and continued backward throughout school life when comparison was made with the average attainment of the children as a whole under the same general conditions. For example, among 8-year-old boys 44 per cent. of those with signs of rickets were below the second standard, as compared with only 30 per cent. of the boys as a whole. It is suggested that this result may

be due in part to faults in the home environment and in part to direct damage produced by rickets. Such children are drawn largely from families in which there is less parental interest and less capacity for domestic management than in the population at large. At the same time a susceptibility to catarrhal conditions, induced by rickets, may interfere with education, partly by causing irregular attendance and partly by sapping the child's general vitality. Dr. Newsholme concludes his report by remarking that rickets is to be prevented on the one hand by educating parents as to diet and food values and as to the part played by sunlight, fresh air, and exercise; on the other, by improving the home environment in regard to overcrowding and structural defects which obstruct ventilation and lighting in the house. He calls for coördination in the efforts of the public bodies concerned, the Public Health Committee with its child welfare centres and health visitors, the Education Committee with its nurses and schools of cookery and household management, and the Poor-law medical authority with its powers of supplying food in necessitous cases.

## A CONTROL FOR THE AUTO-URINE REACTION.

THE question whether it is possible by any means to demonstrate the existence of an active tuberculous focus in the organism has long been the subject of debate. Prof. H. Wildbolz answered it in the affirmative. Many observers dispute the practical utility of the reaction described by him. Wildbolz asserted that when the urine of a tuberculous patient, concentrated to one-tenth, is injected intracutaneously, a circumscribed infiltration ensues showing the existence of an active focus. This reaction was said to be due to the elimination by the urine of tuberculous antigen, and Wildbolz contested that besides tuberculosis only certain kidney conditions and staphylococcæmia gave positive reactions. He made a proviso, therefore, that the test was useful only in individuals who gave a positive von Pirquet reaction. Dr. Mario Venuti has taken up the question,[1] adopting a system of controls. The objections to the validity of the reaction may be summed up as follows: The infiltration even when pronounced may not be an indication of a specific reaction since it occurs in healthy subjects, and may be attributable to urinary salts, toxicity of the urine, or hypersensibility of the skin. On the other hand, the reaction may be negative in individuals who have evident and active tuberculous lesions and react to tuberculin. The controls proposed by Dr. Venuti consist in injecting into the individuals under examination, not only their own urine, but also the concentrated product of one from a certainly healthy subject, and from another who is the proved subject of tuberculosis in a marked degree. In practice three events may occur. The patient under examination may react neither to his own nor to the physiological urine. This absence of infiltration may be the index either of a negative reaction in consequence of the absence of antigen in the urine, or of no reaction, dependent on anergy in the subject. If the first hypothesis is correct the hetero-urine reaction with urine from another tuberculous individual constituting the control will cause in the patient a characteristic positive result, and the evident absence of antigen in the auto-urine excludes the presence of an active tuberculous lesion. If, on the other hand, it is a case of anergy not even the urine of the control will be sufficient to cause infiltration, and it will be necessary to inject the urine under examination into the control to confirm or exclude, according as the reaction is positive or negative in him, the activity of the tuberculous process in the patient under examination. In the second place, when the patient gives a positive reaction to his own and a negative to physiological urine, in order to prove the specificity of the reaction and exclude the intervention of some unknown aspecific factor to which the subject is sensitive, it will be useful to inject into the control the urine under examination and that of the control into the subject. If both are equally positive then the subject is allergic and affected with active tubercle. A third possibility is that the patient may react positively both to his own and to physiological urine; his skin is evidently hypersensitive to urinary salts, and the injection of the urine of the control confirms it. Here, as in the first case postulated, the injection of the urine under examination into the control will show antigenuria and hence active tubercle. Dr. Venuti insists strongly on the value of these controls without which he considers Wildbolz's reaction has no diagnostic importance. If the controls are used in the manner described he claims that the combined results may be used as a sure test as to whether an active process is present.

[1] La Riforma Medica, xxxix., Jan. 29th, 1923.

## THE APPEAL FROM THE NEAR EAST.

IN our present issue we publish an account by Sir Patrick Hehir, medical adviser to the British Red Cross in Greece, of what is being done for the million refugees from Smyrna, Armenia, Syria, and Thrace who are now scattered throughout that country. Those who served with the Allied Expeditionary Force at Salonika will be interested to learn that their old camps and hospitals have provided valuable shelter for many homeless people. The most necessary measures among the refugees are the isolation of cases of infectious diseases and the prevention of the spread of the latter. Antityphus inoculation is being carried out on a voluntary basis. The medical representatives of the League of Nations are actually inoculating all refugees in Greece against enteric, paratyphoid A and B, and cholera, and are also vaccinating them against small-pox. Sir Patrick Hehir speaks highly of the efforts of the Greek Government and the wealthier classes of the community on behalf of the refugees. In cordially seconding his appeal for support from the British people, we may refer to the excellent All-British Appeal cinema film shown to press representatives on March 14th at the West End Cinema, which depicts relief work in Greece, and should be of value in making clear the need of generosity in the Near East.

## PITYRIASIS RUBRA PILARIS.

Dr. Erwin P. Zeisler,[1] dermatologist to the Cook County Hospital, Chicago, has now recorded the first instance in the United States of the familial occurrence of pityriasis rubra pilaris, although two cases of the kind had been previously reported by French and German observers (Beurmann in 1910 and Gaertner in 1921). Dr. Zeisler's patients were a man, aged 46, who had had the disease since early childhood, and three of his four children—viz., a boy aged 12, and two girls aged 16 and 14—who all developed the disease during the first year of life. The father showed a branny erythroderma of the scalp with involvement of the ears. The face, chest, and back were entirely free. There were scaly, rough plaques, chiefly on the extensor surface of the arms around the elbows, and characteristic black plugs on the dorsal aspect of the metacarpus and phalanges. On the lower extremities were oblong, red, scaly patches over the knees and on both sides of the calves. The palms and soles showed a diffuse thickening with transverse striations of the nails. There were no subjective symptoms. In the three children the eruption presented the following appearances: The scalp showed a diffuse redness with branny desquamation. On the cheeks, forehead, nose, and ears there was a shiny seborrhœic type of inflammation with exaggeration of the lines of the skin. On palpation the skin was thickened, inelastic, and rougher than normal. At the lower border of the neck the erythroderma terminated abruptly. Apart from a few scaly lesions on the upper part of the chest, the trunk was free. The arms presented scaly, greyish-red, psoriasiform plaques, chiefly affecting the extensor surface near the elbows. The wrists and backs of the hands showed erythrodermic patches made up of

[1] Archives of Dermatology and Syphilis, February, 1923.

conical papules. Only one case presented the black punctiform plugs characteristic of the disease—on the wrists and, to a lesser extent, on the phalanges. On the lower limbs there were confluent scaly patches with islands of normal skin intervening. On the legs below the knees and on the dorsum of the feet the scaling and roughness were more marked and suggested ichthyosis. The soles showed a diffuse keratosis. In the children, as in the father, there was a striking absence of subjective symptoms. The patients were kept under observation for several years and always showed spontaneous improvement in the summer months. Although only one of Dr. Zeisler's patients showed definite evidence of hypothyroidism, the improvement of the skin condition under thyroid administration was very striking in all, as in other recorded cases of pityriasis rubra pilaris. Locally the free use of baths, followed by a mild emollient such as benzoated lard or lanolin, proved more effective than stronger keratolytic or reducing agents. Dr. Zeisler found that the disease improved up to a certain point under X ray treatment but became refractory to further röntgenisation.

## THE IDIOSYNCRASIES IN THE DIAGNOSIS OF SKIN DISEASES.

IN an address to the Sheffield Medico-Chirurgical Society Sir Norman Walker has recently pointed out that the skin, more than any other organ of the body, except, perhaps, the stomach, is subject to idiosyncrasy. Just as surgeons, he said, had idiosyncrasies in the way their skin reacted to antiseptic lotions, so people generally showed marked personal peculiarities of irritability to special varieties of soap. Other cases of dermatitis had been traced to feather boas cleaned with a certain form of flaked soap, or furs cleaned with formalin. In regard to occupation it was important to find out exactly what a man was doing when he presented himself as a skin patient. A patient who said he was a "telegraphist" was found to be a cleaner of instruments for which he used turpentine. Certain woods, notably teak and satin-wood, were liable to cause irritation in some persons; various plants, such as the *Primula obconica* and *Rhus toxicodendron*, in others. Cosmetics, hair dyes, and quack ointments were also frequent offenders. In his student days, Sir Norman Walker said, dermatology had reached the stage of observation and collection of facts. Bacteriology was then in its infancy. Many diseases then attributed to "gouty" or "nervous" conditions were now attributed to definite organisms. The method of inquiry was important. The patient should be encouraged to tell his own story. Questions should be put in such a way that it was equally easy for him to answer "Yes" or "No." Sir Norman Walker was optimistic as to the possibility of elucidating even subtle and apparently mysterious causes by careful inquiry; as a text for his address he chose from the Book of Job the text "The cause that I knew not I searched out."

## ADRENAL INSUFFICIENCY IN EXPERIMENTAL ANIMALS.

IT is known that removal of both adrenal glands is accompanied by a steady rise in the number of red corpuscles per c.mm. of blood, a concentration of the blood and a greatly increased susceptibility to histamine. In the current number of the *Journal of Physiology*, Dr. C. H. Kellaway, records observations made on adult cats, the medulla of the glands being destroyed by radium emanation, from a sealed capillary glass tube placed in the gland. The amount of medulla remaining at different periods during life was determined by the degree of paradoxical pupil dilatation produced by anoxæmia and by injecting histamine. It was shown that animals can survive in apparently good health for many months in the absence of nearly all the intra-medullary chromaffin tissue. The destruction of sufficient cortex appears to cause symptoms of acute insufficiency while some of the medulla is still functioning. There is very little in common between the symptoms of Addison's disease and the picture presented by animals dying rapidly of adrenal insufficiency, apart from lowered blood pressure and muscular weakness which appear in both. The symptoms which appear in animals which survive in good health for long periods after destruction of most of their intra-medullary chromaffin tissue are not very striking—the most notable change being a fall in the temperature of the animals. A subcutaneous injection of 0·5 mg. of adrenalin restores the animal for a time to its normal pre-operative condition. Another symptom, observed in two animals only, was development of dark-brown patches of pigment in areas of the skin which had been shaved. No pigmentation of mucous membrane was observed. In chronic insufficiency of both cortex and medulla, terminating in death, the symptoms resemble more closely those occurring in acute experimental insufficiency than those met with in Addison's disease. The rise in hæmoglobin is an early and valuable sign of insufficiency. Histamine causes increased output of adrenalin and the effect is in part a direct one on the adrenals. The concentration of the blood in animals dying of adrenal insufficiency is due to cortical effect, while the altered concentration reaction to small doses of histamine in such animals is due to medullary defect. Both cortical and medullary defect appear to play a part in the "collapse" type of response to the injection of small doses of histamine. The subcutaneous injection of adrenalin antagonises the action of histamine in causing concentration of the blood. It also masks the hyper-sensitiveness to histamine exhibited by animals with insufficiency.

## SHOULD ABORTION BE INDUCED FOR TUBERCULOSIS?

IT is disappointing that so little is known of the relation of tuberculosis to pregnancy. The most important work ever undertaken in this field is probably that published in 1917 by Prof. Forssner, of Stockholm, and abstracted at some length in *Tubercle* for August, 1920. Two recent publications on this subject not only show that Forssner's investigations have failed to receive the attention they deserve, but they also prove that two eminent authorities, one a German, the other a Frenchman, may still hold diametrically opposite views with regard to the induction of abortion. Prof. Winter,[1] of Königsberg, considers that slight and inactive pulmonary tuberculosis does not warrant this course, but it is indicated when the disease is progressive. Fever he considers a clear call for abortion, and even when there is no fever he thinks that the disease may yet be progressive, in which case abortion is indicated. He refers to 14 cases, in seven of which the refusal to induce abortion was followed by progress of the disease, and with these and similar experiences he takes the attitude that clinical signs of progressive tuberculosis are, with very few exceptions, an imperative indication for interrupting pregnancy. The second paper, by Prof. L. Bernard,[2] is a defence of conservative measures. His statistics are singularly instructive. Of 327 tuberculous women attending his hospital, 81 had recently been pregnant. In other words, in about 24 per cent. the disease had begun during, or had been aggravated by, pregnancy and its sequels. Of the recent cases of tuberculosis, there were 22 in which the disease had broken out before, and 33 after, confinement. Among the cases in which old disease had been aggravated, there were 15 in which this aggravation occurred before, and 11 after, confinement. These figures seem to suggest that while pregnancy chiefly affects old-standing disease, the outbreak of recent disease is chiefly determined by post-partum influences. By themselves these figures give pregnancy and its sequels a most sinister reputa-

[1] Deut. med. Woch., Jan. 5th, 12th, 19th, and 26th, 1923.
[2] Paris Médical, Jan. 6th, 1923.

tion, and they might suggest the interruption of pregnancy at all costs. But among Prof. Bernard's 327 cases there were also 85 tuberculous patients whose pregnancies had apparently not affected their disease. These figures are well worth pondering over when the induction of abortion is discussed, and an attempt is made to ask in each case: (1) Is the mother greatly endangered? (2) Is the danger definitely due to the pregnancy? and (3) Will the danger cease with the cessation of pregnancy? As no one can give a definite answer in the affirmative to all three questions, Prof. Bernard has assuredly taken up a strong position in refusing to induce abortion even in cases of progressive pulmonary tuberculosis, and it has yet to be proved that the effects of induced abortion are less injurious to the tuberculous woman than letting pregnancy proceed to term.

## LIVERPOOL GUARDIANS AND THE TREATMENT OF CANCER.

AT their meeting on Feb. 28th the West Derby Board of Guardians—now the Poor-law authority for the whole of Liverpool—had for consideration a proposal to set aside for a period of two years Dingle Mount, one of their smaller institutions containing 50 beds, for research work in connexion with the treatment of cancer. The scheme was the outcome of certain encouraging results of the work of Prof. Blair Bell on "The Influence of Saturnine Compounds on Cell Growth," which was published in THE LANCET of Nov. 11th, 1922. Thess results had been brought before the guardians by a strong committee, including Dr. J. G. Adami, Vice-Chancellor of the University, Prof. F. T. Paul, and Sir Robert Jones. There was considerable criticism of the scheme, some notably ill-informed and some offensive, and after prolonged discussion it was rejected by 42 votes to 24. Since the meeting of the guardians a letter has appeared in the *Liverpool Daily Post* over the signature of the three members of the committee mentioned above deprecating the personal attacks made upon Prof. Blair Bell and exposing the more flagrant of the arguments of the opponents of the scheme.

As our readers are aware, Prof. Blair Bell has for several years been testing the activity of certain combinations of lead upon neoplastic cells. He has been extremely guarded in his deductions, desiring that no false hopes should be raised or any public pronouncement made till all the evidence has been thoroughly sifted by experts in the various branches of the work, and the lapse of time shall have set its seal upon such results as he may obtain. To the influential committee before whom the whole of the facts have been placed, these results appeared sufficiently encouraging to demand the most careful and extended investigation. A suggestion was therefore put forward to assign Dingle Mount for the treatment of cases of cancer already in Poor-law institutions along the lines suggested by Prof. Blair Bell. Results were to be watched by the consultative committee, and the clinical and laboratory work assisted by a staff consisting of Dr. John Hay (medicine), Mr. H. F. Woolfenden (surgery), Prof. E. E. Glynn (pathology), Prof. W. C. McC. Lewis (physical chemistry), Dr. W. J. Dilling (pharmacology), and Dr. H. E. Annett (comparative medicine). As regards expense, the patients, of course, would be chiefly those for whom the authorities had already undertaken responsibility; and in order to cope with the additional expenditure essential for the experimental and laboratory side of the investigation a large sum of money has been definitely guaranteed by the generosity of a small band of Liverpool business men. No additional cost therefore to the ratepayers was anticipated.

These points were laid before the board of guardians by a deputation headed by Dr. Adami. The Ministry of Health was approached by the guardians for an opinion and declared in favour of such work being undertaken, provided that no fresh charges were incurred by the ratepayers. Unfortunately, the board of guardians have not only taken upon themselves to reject the scheme, but have allowed at their meeting criticisms of Prof. Blair Bell's motives and of the scientific quality of the work. It is to be hoped that such an opening as this, in connexion with so important a matter as cancer, concerning which we can ill afford to let slip any chance of progress, may yet be utilised.

## THE OUTBREAK OF SMALL-POX IN DERBYSHIRE.

A LOCAL correspondent writes, under date March 11th, as follows: "The prevalence of small-pox in several parts of Derbyshire has made the population realise the necessity of vaccination. The epidemic seems to be of some duration. The first cases appeared as much as five months ago, but they were mild cases and their occurrence caused little attention outside medical circles. Now, however, the cases are more virulent as well as growing in number. At Clowne, which has scarcely more than 6000 inhabitants, during the first ten days of March there were 11 new cases of small-pox; the total for Derbyshire is now 69. The rural council has issued notices to the inhabitants that the law will be put into action if they do not at once notify, or if they attempt to conceal cases. The schools are not closed, only contacts are forbidden to attend. But these contacts have been attending Sunday schools, and this has caused some complaints to be made and more drastic precautions are now likely to be enforced. The important towns of Chesterfield and Mansfield, to say nothing of the great city of Sheffield, are close at hand; constant intercourse takes place with these centres, and it is quite certain that at first some cases of small-pox were not notified. Drastic measures were therefore very necessary, and the visit of Dr. Wilkinson, representing the Ministry of Health, has had a good effect in impressing the ratepayers with the fact that effective precautions are the truest form of economy. The proposal to isolate contacts as well as patients caused some alarm, especially when the cost of such a measure was considered. So, for the moment at least, it was not adopted; Dr. Wilkinson has been content to insist that all the contacts should be at once vaccinated. But people persist in calling on neighbours where there is small-pox to express sympathy. Complaints have been made against such forms of mistaken kindness, notably at a recent meeting of the Alfreton Urban Council. That, in spite of this, the necessity of precautions is better realised has just been enforced in a rather peculiar manner. The Bolsover Colliery Prize Band, seeking to make good use of their popularity, asked the Eckington justices to grant them a licence to give a concert at the Clowne picture-house. The chairman, Colonel Butler Bowdon, immediately inquired whether all the members of the band had been vaccinated. No one present was prepared to vouch for the vaccination of the musicians, and thereupon the chairman declared that, in consequence of the small-pox epidemic prevailing at Clowne, he did not think it advisable to grant the licence, and the application was refused."

We shall be interested to hear if this action becomes a precedent, so that henceforth public performers will be called upon to produce vaccination certificates.

HOSPITALS in the County of London or within nine miles of Charing Cross desiring to participate in the grants made by King Edward's Hospital Fund for London for the year 1923 must make application before March 31st to the Honorary Secretaries, 7, Walbrook, London, E.C. 4. The nearness of this date should be borne in mind. Applications will also be considered from convalescent homes which are situated within the above boundaries or which, being situated outside, take a large proportion of patients from London.

# Modern Technique in Treatment.

*A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.*

## XI.

## TREATMENT OF INGUINAL HERNIA IN CHILDHOOD.

IN infancy, inguinal hernia is much more common in boys than girls, and it is often associated with congenital constriction of the external urinary meatus and with phimosis; the first step in treatment should be the cure of these conditions and the relief of any other cause of strain, such as constipation and bronchitis. Narrowing of the meatus is often associated with phimosis; in all operations of circumcision the meatus should be examined and if necessary enlarged by a ventral cut. One side is then puckered by a fine catgut stitch to prevent adhesion of the raw surfaces and recurrence of the disability. There is no evidence to support the idea that screaming in a boy baby is likely to cause hernia and justifies irregular feeding or other means of pacification; the best way to train babies of both sexes not to scream is to ignore them. If, however, a hernia has already developed, or there is mal-descent of the testicle, prolonged screaming calls for inspection of the baby; descent of hernial contents or torsion of the testicle may have occurred and necessitate treatment, such as readjustment of a truss.

### *Hernia in Infants.*

*Conservative Treatment.*—In uncomplicated cases, seen during the first nine months of life, inguinal hernia may be treated satisfactorily by trusses. For most babies a wool truss is efficient, cleanly, easily looked after, and cheap; it may be made of several strands of soft knitting wool, or of a strip of flannel. For each case several trusses should be available, so that the patient may never be without one even for a few minutes; the mother or nurse is instructed that as soon as the baby is quiet after the removal of a soiled napkin or after the bath the wet truss is to be removed and a fresh one applied, when the skin has been dried and powdered; while this is being done, in many cases the hernia can be prevented from descending by keeping the hips extended; failing this, finger pressure on the inguinal regions must be applied until the truss is in position. For fat babies, even under 9 months, a wool truss is difficult or impossible to fit, and a pneumatic rubber horseshoe truss must be used; it should fit snugly each side of the base of the penis, and the perineal straps must be firmly adjusted; wool should not be interposed between truss and skin, for it encourages moisture and inflammation. Special care should be directed to the skin, and a second truss be available so that there shall be no intermission in treatment.

*Radical Cure.*—For herniæ presenting special difficulty in reduction or retention cure by operation is occasionally advisable even in the first nine months of life. Marked wasting and bronchitis are contra-indications to operation, but chronic digestive disturbances form no bar, for they are often due to the presence of the rupture. Radical cure of hernia in infants, as in older children, is a simple operation. The cord at the external abdominal ring is exposed through a short incision; the sac is opened and dissected up to its neck, care being taken not to grasp the delicate vas with forceps; the sac is then removed after transfixion and ligature of its neck, one stitch is placed in the coverings of the cord, and the skin wound is closed, preferably with a subcuticular suture; the object of using this form of suture is its ease of removal. During after-treatment the baby is kept on his back, with the elbows splinted in extension, and the wound will be most easily kept dry and clean if no dressing is applied. Operation in these very young babies should be reserved for cases of special difficulty, for, besides the possible interference with breast-feeding, there are special risks from the effects of anæsthetics, and very careful nursing is required.

### *Hernia in Young Children.*

Conservative treatment after the age of 9 months consists in the application of a horseshoe rubber truss; these trusses are adjustable, but the rubber stretches before long, and new trusses must be supplied about every four months. This method is suitable to infants up to 15 months; after this time the most suitable truss is a light rubber-covered spring one, carefully fitted. If by these methods the hernia is kept unintermittently reduced, in many cases cure may be expected by the time the child is 2 years old; if, however, the rupture is present after the fifteenth month, cure by truss is unlikely, and the simple operation mentioned above is to be advised, in the absence of rickets or other special contra-indication.

*Strangulation* is predisposed to by constipation and bronchitis and is not uncommon in babies; it is rarely dangerous, and can usually be overcome without operation. The baby should be placed on his back with the legs tied in a vertical position and the buttocks raised on a pillow; a fomentation is applied to the inguinal regions and scrotum. In most cases after half-an-hour either it will be found that the contents of the sac have slipped back, or reduction can be effected by light manipulation. Failing this, operation must be undertaken.

Operation is the most suitable method of treatment for cases of hernia seen after infancy; the objections to treatment by trusses, especially its interference with athletics, are sufficiently obvious in children of school age. Simple removal of the sac with ligature of its neck high up is all that is necessary, opening up the inguinal canal and suturing muscles being only called for in certain of the rarer forms of hernia, especially the interstitial varieties associated with retention of the testicle.

### *Hernia Complicated by Mal-descent of the Testicle.*

Incomplete or delayed descent of the testicle is very common and is nearly always accompanied sooner or later by a congenital hernia. Though the condition is usually noticed early, the abnormal position of the testicle as a rule produces no symptoms and calls for no treatment in the earlier years of life. In some cases it is possible to limit the development of the hernia by the application of a truss with a forked pad; but no truss should be applied if there is risk of pressure, continual or occasional, on the testicle; apart from pain, this would tend to increase the probabillty of the testicle failing to function later. In cases of hernia associated with mal-descent of the testicle operation is best deferred until the boy is over 7 years of age; in some the testicle makes a late descent and simple cure of the hernia is all that is necessary. Torsion of the testicle, and strangulation of a hernia with incomplete descent of the testicle, are indications for immediate operation at any age, and in such cases the testicle must often be removed. The best operation for uncomplicated cases of combined mal-descent of the testicle and hernia is one allowing the testicle to be brought into the scrotum.

C. W. G. BRYAN, *M.C.*, F.R.C.S. Eng.,
Surgeon to Out-patients, St. Mary's Hospital and Paddington Green Children's Hospital.

Previous articles in this series are:—

I. Medical Treatment of Gall-Bladder Disease, by Sir Humphry Rolleston. II. Early Pulmonary Tuberculosis in the Young Adult, by Dr. Claude Lillingston. III. Neuralgias of the Head and Neck, by Dr. Wilfred Harris. IV. Whooping-Cough, by Dr. T. Izod Bennett. V. Scabies and Pediculosis, by Dr. H. W. Barber. VI. Abdominal Injuries, by Prof. Charles A. Morton. VII. Aural Discharge in Children, by Mr. Harold Barwell. VIII. Vaginal Discharge, by Mr. A. W. Bourne. IX. Minor Injuries to the Eye, by Sir J. H. Parsons. X. Epilepsy, by Dr. Gordon Holmes.

The Treatment of Inguinal Hernia in Adults will be dealt with next week by Prof. A. W. Sheen.

# Special Articles.

## WITH THE GREEK REFUGEES: AN APPEAL.

BY SIR PATRICK HEHIR, K.C.I.E., C.B., C.M.G.,
MAJOR-GENERAL, I.M.S. (RET.)

AT the present moment there are about one million refugees in Greece, scattered over the country in smaller or larger groups. At the end of December there were 868,186; since then roughly 150,000 more have wandered in by ship and train, or in the north by cart or on foot. They have come from many regions—Smyrna, Armenia, Syria, Eastern Thrace, and areas bordering on the Black Sea; there are likewise among them some Assyrians. These people soon settle down, and are, as a rule, unwilling to move, except when they feel that they can do better in other camps, or have sufficient capital to start small shops, or find employment in their own trades.

The refugees have been chiefly housed in and near the larger towns. They are located in barracks, prisons, specially erected huts, offices and Government buildings of all kinds, in churches, synagogues, temples, mosques and theatres, cinema palaces and other places of amusement, warehouses, stores, factories, schools, stables, railway buildings, under canvas, in verandahs, along quays, and wherever shelter of any kind is available. In the Salonica area the old British, French, and Greek camps have provided shelter for many thousands at Harmankieu, Kalamaria, Lembet, and Toumba; the old British General Hospital Tarant huts in particular are accommodating large numbers of these unfortunate people. The huts required little repair; the water-supplies were again revived, and it is interesting to see familiar "Thresh" and "Velox" steam disinfectors again delousing infected clothes and bedding. In some places homes have been provided by the local inhabitants for the better-class refugees—for example, in Salonica, by the British and American residents. The age- and sex-distribution of refugees has varied greatly. Those from Asia Minor contain few men and boys of fighting age, since these were taken by the Turks as prisoners. The old men and women are in a low state; the mortality among them has been high. The refugees from Eastern Thrace are comparatively healthy; all got away deliberately and were able to bring with them much of their worldly goods.

Though there are several organisations carrying out relief work—the British Red Cross Society, the American Red Cross Society, the International Red Cross Association, the League of Nations, "Save the Children" Fund representatives, American Y.M.C.A., Near East Relief, and others—so far as I have been able to see there is little or no overlapping. Each is operating in a specific way over a more or less definite area. The task connected with refugee relief is altogether too vast for any one philanthropic body, and even with the wise division of labour existing it is probable that at least some of these organisations will cease to function for want of financial support.

### *The Organisation of the Camps.*

On the whole the conditions are more satisfactory than I expected, although much misery, discomfort, and hardship is obvious in every refugee camp. The size of the camps varies from holding, say, 500 to 12,000. They are usually run on the following lines. A person of some importance, selected from among the refugees, acts as a sort of under-commandant, and, assisted by some soldiers, exercises discipline of a kind. The doctors are Greek refugees. The sanitary work connected with epidemic disease is being carried out by the Government Health Department under the guidance of an officer of one of the Red Cross societies. The vaccination against enteric, cholera, and small-pox is being done by a special establishment organised by Dr. Gauthier, delegate from the League of Nations. This work is very well done. Medicines are provided by the various relief associations, supplemented, when necessary, by supplies from the Greek Government medical stores, but as there is usually great delay in compliance with indents made on these stores, many of the drugs have to be purchased from chemists locally. The British Government made a valuable and timely gift in the shape of a large stock of medicines, medical and surgical equipment, and some hospital appliances. In some camps the water-supply is defective, which interferes with attempts to eradicate typhus fever from an infected camp. The Greek administration is making every possible effort to remove this difficulty.

*Hospitals.*—It cannot be said that the hospitals of the refugee camps are run on ideal lines. The medical officers are in almost all cases refugees themselves, and, though obviously doing their best, in their present depressed condition are wanting in initiative, organising ability, and power to exercise proper discipline: absence of discipline and order are the two great defects in these institutions at present. Housing conditions and general hardships, insufficient food and exposure, have considerably reduced the vitality of the refugees, so that when disease attacks them it runs a serious course and is frequently fatal. This high mortality has aroused antipathy to the hospitals; cases of sickness in the early stage are hidden, and often it is only when the patient is dangerously ill that hospital relief is sought. This is one of the ways in which typhus fever is being kept up. Many cases of serious illness are due to prolonged malnutrition; this is specially the case with children and infants, a fair proportion of whom are in a marasmic state. Enteritis is one of the commonest of the infant diseases in these camps, and the mortality from it is heavy. The debilitated mothers have either no milk or a scanty supply of poor quality. This is the time for firms manufacturing dried milk or infants' foods to come forward with help, despatching their supplies through the right channels.

### *The Activities of the British Red Cross.*

In the Athens district the camp with which the British Red Cross is specially connected is in New Phaleron, and is known as Stringos Camp. It contains about 3500 refugees occupying a large vacated factory. The medical work is carried on by three refugee Greek doctors, and pro tanto is satisfactory. It has a small hospital of 30 beds, the serious cases being sent to one of the general hospitals in Athens; there are some 60 out-patients daily. As in all the Greek camps, the latrine arrangements are very foul; we expect a British medical officer here as superintendent, when these things will be on a more satisfactory footing. There are three British ladies doing excellent work as nurses and supervisors; more are required, and some are due in a few days' time. The British Red Cross Society is meeting the medical and sanitary needs of another smaller camp containing 350 refugees near Athens. The Society has likewise taken over Lady Rumbold's Hospital of 300 beds at Guimulgina. It hopes to open out smaller hospitals at Drama, Seres, Kavalla, and other areas in Western Thrace. A British Red Cross train laden with various supplies, including a valuable and much required stock of medicines, and provided with four ambulance coaches, is stabled at Salonica, whence it is distributing its contents.

Inoculation against typhus is being adopted; it is at present in the experimental stage, and is voluntary. There is absolutely no reaction. Dr. Georges Blanc, Directeur de l'Institut Pasteur Hellenique, tells me that he has done thousands of inoculations, has not heard of any inoculated person acquiring the disease, but cannot yet express an opinion as to its prophylactic value.

The most important measures necessary at the present time are the isolation of all cases of infectious disease and the prevention of the dissemination of

such diseases. Cases of typhus fever are sometimes not discovered in refugee camps for a few days after they have become infective. I have seen at least a dozen cases diagnosed in the early stages as influenza; one group of these wrongly diagnosed cases infected a whole general hospital. In a few instances I have discovered cases of typhus in the pre-eruptive stage walking about among the healthy members of camps. There seems to be a remarkable difference in the intensity and mortality of typhus in different areas. In the Athens and Salonica districts the disease is not so severe as in other places. In Corfu it is extremely virulent; I have just heard that of 25 doctors employed with the typhus outbreak in that island in February eight have been infected and seven have died, but my informant is not a medical man.

*The Work of the League of Nations.*

The League of Nations is undertaking admirable work in connexion with the prevention of infectious disease and the permanent settlement of 10,000 refugees. Their medical representatives are now carrying out the enormous task of inoculating the whole of the refugees in Greece against enteric, paratyphoid A and B, and cholera, and vaccination against small-pox. These protective measures are being carried out at the same time; a polyvalent vaccine of T.A.B. plus cholera vibrios is being injected, and ordinary vaccination against small-pox is done at the one sitting; the polyvalent vaccine is, of course, repeated on the eighth day. The League of Nations is also engaged upon the permanent settlement of 10,000 refugees from Eastern Thrace, the Caucasus and elsewhere, on land granted by the Greek Government, some in towns, others in agricultural villages. The Lady Rumbold Hospital is connected with this movement; all the adjacent villages will have visiting doctors, serious cases being transferred to the general hospital, or to smaller clearing hospitals, which will also be under the British Red Cross.

The work of relief being done is in no sense a permanent remedy. Nothing short of making the people self-supporting can be looked upon as a solution of the difficult problem that faces the Greek Government. Refugees cannot be made strong and fit for real hard work on relief rations. One of the most puzzling difficulties at present is the finding of suitable work for these unfortunate people. Many have got into the way of expecting gratuitous relief, and when work comes their way they move in the opposite direction. It may become necessary not only to provide work, but to compel the people to work. The manner in which the Greek Government and the better classes of the Greek community have worked on behalf of the refugees has aroused universal admiration. I believe that one of the happiest and best accommodated refugee camps is that of the Armenians in a suburb of Athens.

I would make an earnest appeal to the philanthropy of the people of our Empire to help in the cause in which I am personally engaged—the work of the British Red Cross Society. There are many Britishers, men and women, doing all that is in their power to look after the weaklings and sick among the refugees in the midst of typhus, small-pox, measles, and other infectious diseases. I can also vouch for the fact that all funds entrusted to the British Red Cross (Near East Section, 35, Albemarle-street, London) are devoted to the care of those for whom it is craved, and they are expended with the greatest possible judgment. At present the Americans are taking by far the largest share of this relief work in all its branches.

MEMORIAL TO THE LATE MR. HUGH WHITWELL.—It is proposed by several friends and patients of the late Mr. Hugh Whitwell to endow a cot in the Jenny Lind Hospital for Children, Norwich, as a memorial to him, the cot to bear his name. The cost is £1000, and a sum of about £700 has already been received towards this object.

## ROYAL SUSSEX COUNTY HOSPITAL, BRIGHTON.

### REPORT OF COMMITTEE OF INQUIRY.

THE report of the committee of inquiry appointed on Nov. 16th, 1922, to inquire into the general administration of the Royal Sussex County Hospital has now been issued,[1] and opens with an expression of regret that the board of management did not consult an expert at the beginning of 1922, when they found that their expenditure in 1921 greatly exceeded that of 1920, in spite of the fact that there had been a considerable fall in nearly all prices. The committee gave statistics showing that while the cost in a group of provincial hospitals fell £3 per bed in 1921, compared with 1920, the Royal Sussex County Hospital expenditure increased £15 per bed.

*Observations on Expenditure.*

Sir Napier Burnett, whose assistance was invited by the committee, found, in a report to that body, that under two heads of expenditure alone there was a very large excess over the average of comparable hospitals. Under the head of "domestic," the expenditure exceeded the group average by 32 per cent., or £72 14*s.* per bed, as against an average of £62 13*s.* per bed for the two years 1920 and 1921 taken together. Under the head of "surgery and dispensary," the expenditure was 38 per cent. above the group average, or £62 12*s.* per bed, as against £49 14*s.* per bed for the same period. Under those two heads alone there was an expenditure of £22 19*s.* per bed above the group average of comparable hospitals, and in the opinion of the committee this great difference was, to a large extent, due to lack of supervision. The secretary, although he was called superintendent, had never, in fact, been superintendent, but merely secretary to the board of management.

The report goes on to give details of the investigations made personally by the committee. In the dispensary there was great lack of control. With regard to the secretary and his staff the accommodation was quite inadequate, and the committee strongly urged that the superintendent of the hospital should be given greater powers of supervision. The committee considered it would be an advantage to the superintendent to visit some of the comparable hospitals to study the various systems of administration.

*Details of the Hospital's Income.*

As to income, the committee said that it was obvious that whatever help might accrue to the hospital from well-considered improvements in administration, its financial future could not be contemplated without anxiety unless the dependable income of the hospital was permanently increased. The committee quotes the following figures, the first column denoting the Brighton hospital's percentage of total ordinary income, and the second column the group average:—

| | Per cent. | Per cent. |
|---|---|---|
| Invested funds | 16 | 14 |
| Workmen's contributions | 3 | 23 |
| Patients' contributions | 17 | 8 |
| Public services | 10 | 17 |
| By or on behalf of patients | 27 | 25 |
| Subscriptions | 8 | 14 |
| Donations | 39 | 16 |

The committee considered the figures to be illuminating. It was true that the details of the income of the group from which the average was calculated differed very widely, but it would be seen that the Royal Sussex County Hospital depended for nearly 40 per cent. of its income as against an average of 16 per cent. in the other hospitals of the group on what were called donations, the term including, besides gifts usually so-called, the proceeds of bazaars, special appeals, and other non-recurring contributions.

[1] For the annual report of the hospital for 1922, see THE LANCET, March 3rd, p. 465.

The committee considered that the only way in which a campaign could be carried on for raising subscriptions and patients and workmen's contributions would be to act in conjunction with other medical charities, and that for this purpose there should be a central committee on which each institution would be represented, and the collection of funds regulated by district subcommittees.

The committee commended their findings to the serious consideration of the board of management. It was to be desired that the efforts now being made to establish the hospital on a firm financial basis would be successful as constant special appeals for funds were both embarrassing to the board and irritating to the public.

In a covering letter, the Rev. E. D. L. Harvey, chairman of the committee, said it was felt that the board of management failed to adopt their methods of administration to the changed conditions brought about by the war. If the coöperation of the honorary medical staff, as also the nursing staff, could be secured, the public could rest assured that steps were being taken to put the hospital on a sound financial basis.

## IRELAND.

(FROM OUR OWN CORRESPONDENT.)

### *Local Government Bill in Dail Earann.*

THE debates on the Local Government (Temporary Provisions) Bill were continued last week in committee. All attempts to improve the Bill by amendment have so far failed. The efforts of Sir James Craig and Deputy Alfred Byrne to save for Poor-law officers some of the rights given them by the Local Government (Ireland) Act of 1919 were defeated, and a Bill introduced as a purely temporary indemnifying measure has been used to destroy statutory rights. In another section the Bill authorises local authorities to go back on the bargains made in the past two or three years with retiring officers. These officers were induced to retire, as Deputy Byrne put it, by certain promises, and the Government now steps in to annul these promises. Deputy T. Johnson, leader of the Labour Party, criticised the hospital policy of recent Poor-law reforms, in that all district hospitals were abolished and only one hospital left in each county. He stated that deaths had occurred owing to the dangers and hardships of the long journey to hospital. The Minister for Local Government, in reply, admitted that district hospitals might be necessary in some areas, and promised to consider each case on its merits. This seems to be the only concession made to any of the criticisms of the measure.

### *Death of a Surgeon-Probationer.*

The death, from wounds received in action, of Lieut. E. W. McQuaid, a surgeon-probationer in the National Army, was reported last week. He gave his life in very gallant circumstances. A National soldier was shot down in a conflict near Newport, Co. Mayo, and Lieut. McQuaid ran to his aid. While attending him, shots were fired—whether purposely or not—and Lieut. McQuaid, although seriously wounded, continued his work and carried his patient to a place of safety. His death occurred four days later. Eugene McQuaid was a student of the Royal College of Surgeons in Ireland and of Mercer's Hospital, and had served for a time in the Royal Air Force before beginning the study of medicine. At the time of his death he was 23 years of age. He was the son of Dr. E. W. McQuaid, of Cootehill, Co. Cavan.

### "*Sweepstakes Bill.*"

The Public Charitable Hospitals (Temporary Provisions) Bill, or "Sweepstakes Bill," as it is generally called, has passed its second reading by a fair majority. As stated in these columns on March 3rd, p. 455, the Bill proposes to legalise the holding of lotteries or sweepstakes in aid of charitable hospitals and convalescent homes. Such sweepstakes are to be conducted by a committee, of which the members are named in a schedule to the Bill. These members are 12 medical men connected with 12 hospitals in or near Dublin. It is noted that some of the leading charities are not represented. Section 1 of the Bill defines the institutions eligible to share in sweepstakes somewhat closely: "Public hospitals and convalescent homes in Saorstát Earann which afford medical or surgical treatment without charge or reward and which hospitals or convalescent homes *are mainly supported by the voluntary subscriptions of the charitable public.*" It is doubtful whether all the general hospitals of Dublin are not excluded by the words italicised. The main support of most of the hospitals of late years appears to come from the contributions of patients.

March 12th.

## BERLIN.

(FROM OUR OWN CORRESPONDENT.)

### *Financial Difficulties of the Berlin Medical Society.*

THE "Langenbeck-Virchow House," the home of the Berlin Medical Society, is in danger of being given up owing to financial emergency. The society has only possessed premises of its own for seven years: meetings were formerly held in the old Langenbeck House, which belonged to the German Surgical Association—a body which only met once a year for a four days' congress, and for the remainder of the year let its accommodation to the medical society. After a time the Langenbeck House proved too small to hold the surgical congresses; in 1913 an arrangement was made between the German Surgical Association and the Berlin Medical Society to build a joint home, the Langenbeck-Virchow House, which was, in fact, opened in August, 1915, the inaugural addresses being read by Prof. Trendelenburg, formerly of Leipzig, and Prof. Landau, of Berlin. The building is lavishly furnished and contains one large hall, several small halls, a library, and the offices of both societies. At a recent meeting of the medical society the hon. treasurer stated that, although the annual subscriptions of members had been increased from 20 to 2000 marks, and notwithstanding gifts from many members, the 1923 deficit would probably be 11 million marks, even if the depreciation of the currency were to make no further progress. Messrs. Siemens and Halske, the electrical engineers, who have already hired part of the building, have, however, offered to bear all costs of heating, lighting, and salaries of the staff, and to pay off the present deficit, provided that they may have the right to lease all those parts of the building which are not required by either society. The committee were authorised to make an arrangement of that kind, provided that the contract before coming into force was agreed to by a general meeting of the society. The Surgical Association will, no doubt, also consent; otherwise the house must be given up, and the library closed. A similar arrangement already exists at the Kaiser-Friedrich House for post-graduate study, where the greater part of the building has been let to a commercial company.

### *A Bill for Combating Venereal Diseases.*

A Bill dealing with venereal diseases will shortly be introduced in the Prussian Parliament. It proposes to enact that persons suffering from these diseases must have attendance from qualified medical men; people who either have not the means to pay a doctor themselves, or do not belong to a sick club, must be provided for by the provincial insurance boards (Landes-Versicherungs-Anstaltenhabe). These boards have already instituted advisory offices (Beratungs-Stellen) where medical advice is given gratuitously to persons with venereal disease. According to the suggested measure, persons suspected of such diseases would, when requested by a local sanitary officer, have either to produce a certificate of health or to consent

to examination by a medical officer. Under certain circumstances they would be compelled to apply for admission to a hospital. Persons who know that they have a venereal disease, and nevertheless run the risk of infecting others, may be prosecuted and punished with imprisonment for a period not exceeding five years. In the case of married people, prosecution would only be instituted by request of one of the couple. Advertisement of drugs for treatment of venereal diseases would be allowed in medical and pharmaceutical journals only. Persons who permit a child suffering from hereditary syphilis to be nursed by a healthy nurse would be liable to severe punishment. The Bill would also terminate the system of registration of prostitutes, which in Germany has existed for centuries, and has lately been opposed by certain women's associations from a moral and ethical standpoint, and by medical men because it has proved useless. In Holland, Switzerland, and the Scandinavian States, it has been abolished for some time, without harm to public health. The registration, of course, concerns only the minority of these women who are openly known as prostitutes; the great majority are secret prostitutes, who come under control only when caught by the police. How small the number of public prostitutes is may be seen from the fact that in Dresden, a city of more than 600,000 inhabitants, only 250 women are registered; in Stuttgart, again, with about 300,000 inhabitants, only 25 are registered. Abolition of registration would thus have no effect on the spread of the diseases. There will certainly be considerable controversy concerning the provisions relating to the compulsory notification of certain persons suffering from disease; by this provision a medical man must give information when a patient ceases treatment before being cured, and also when the patient's occupation renders him liable to spread the disease—as, for instance, in the case of a waiter. This provision, although strictly drawn up, will nevertheless be useless; a patient might either conceal his name and profession—an easy matter in large towns—or might try to find an unscrupulous medical man; or again, will, without consulting a doctor, attempt to cure himself by using drugs formerly prescribed for his friends. It is not likely that the Bill will become law without important alteration. The proposed system of notification imposes great responsibility on the medical profession, and compels its members to give up the fundamental principle of professional secrecy. It has been alleged that this principle has been infringed already by the law concerning the notification of contagious diseases, such as scarlet fever, enteric, diphtheria, &c. There is, however, a great difference, as nobody has hitherto objected to notification of scarlet fever, whereas many people will object when the notification concerns syphilis.

### *A Medical Minister of State.*

Dr. W. Hellpach, professor of psychology at the technical college at Karlsruhe, and a democratic member of the Baden parliament, has recently become Minister for Education of the Republic of Baden. This is the first instance of a medical man gaining cabinet rank in Germany. Some 30 years ago the late Baron von Lucius was Minister of Agriculture in Prussia, but he had never engaged in practice, and as Minister of Agriculture had nothing to do with medical matters. Prof. Hellpach, whose department includes matters connected with the universities and the health service, is well fitted for his office; he has been for many years editor of the *Aerztliche Mitteilungen*, the official organ of the Leipziger Verband.

### *Meat Poisoning in Freienwalde.*

A few days ago about 200 people became seriously ill in Freienwalde, a small spa in the province of Brandenburg. The patients suffered from vomiting, diarrhœa, fever, and cardiac weakness, which in five patients, three of whom were children, led to a fatal issue. The investigation carried out by the local medical officer and the Berlin sanitary authorities proved that the patients had been poisoned by horse-meat, eaten as sausages. For some time the patients continued to be very weak and to suffer from cardiac debility. Horse-meat, almost unknown as a food before the war, has now become a regular dish on many middle-class tables, where the family cannot afford veal or mutton, which actually costs 5000 marks a pound—i.e., half a day's wage of a very well-paid workman. Horse-meat, as a rule, is of inferior quality, and the examination of meat, especially in smaller towns, is not always reliable.

### *Women Students in Prussia.*

In the winter term the number of women students in Prussia was 4555, the total number of students being 46,466. Of the women students 4112 were Germans and 443 foreigners, the majority of the latter being Russians. Whilst the majority of men students belong to the middle classes, the women students are for the greater part of the upper classes. The numbers of women studying medical and allied subjects were as follows: various branches of science, 152; medicine, 777; dentistry, 159. Since 1913 women students have doubled their numbers; there has been an immense general increase since the winter term of 1917–18, although the number of women students in the faculty of medicine has considerably fallen off. In all Germany the percentage of women students is the same as in Prussia—viz., 9·7.

# The Services.

## ROYAL ARMY MEDICAL CORPS.

Lt.-Col. F. J. Palmer retires on ret. pay.

Maj. E. B. Booth retires on ret. pay and is granted the rank of Lt.-Col.

Maj. W. R. O'Farrell is secd. for service under the Foreign Office.

Temp. Maj. T. M. Kendall relinquishes his commn. and retains the rank of Maj.

Capt. O. W. J. Wynne retires, receiving a gratuity, and is granted the rank of Maj.

### ARMY RESERVE OF OFFICERS.

*Army Dental Corps.*

Capt. J. B. Murray, late Spec. List, to be Capt.

### TERRITORIAL ARMY.

Maj. J. Leach, having attained the age limit, is retired, and retains the rank of Maj., with permission to wear the prescribed uniform.

Capt. J. McKay resigns his commn. and retains the rank of Capt.

General Hospitals: The undermentioned relinquish their commns. and retain their rank except where otherwise stated: Maj. G. Hall, Capts. E. W. Bain, C. H. Budd, W. G. Howarth, W. B. Marshall (granted the rank of Maj.), H. J. Smith, and F. A. Hepworth (granted the rank of Maj.).

Sanitary Companies: Capt. W. Johnstone relinquishes his commn. and retains the rank of Capt.; and Lt. J. G. Saltmarsh, having attained the age limit, is retired, and retains the rank of Lt.

## TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers: Col. F. W. Higgs, and Majs. H. L. Gregory, S. R. Gibbs, and D. Shannon.

## ROYAL AIR FORCE.

The undermentioned are granted permanent commissions in the ranks stated: Flight-Lt. (since promoted) A. J. Brown and Flying Officer W. E. Barnes.

E. G. S. Hall is granted a short service commn. as a Flight-Lt.

## INDIAN MEDICAL SERVICE.

Col. R. C. MacWatt to be Maj.-Genl.

Lt.-Col. W. J. Niblock retires on account of ill-health.

UNIVERSITY OF SHEFFIELD.—The following appointments have been made: Dr. G. Grant Allan (Edinburgh) to the post of assistant bacteriologist; Dr. Clara D. Tingle to a demonstratorship in pathology.

# Correspondence.

"Audi alteram partem."

## THE OPIUM CONVENTION AND THE LEAGUE OF NATIONS.

*To the Editor of* THE LANCET.

SIR,—Your annotation on this subject last week referred to the importance, as regards India, of the opinion recently expressed by the joint subcommittee formed from the Health and Opium Committees of the League of Nations, to the effect that the only "legitimate" use of opium, morphine, cocaine, and the other specified dangerous drugs, is their medical use. I should, however, be glad of the opportunity to add that when this resolution of the joint subcommittee was submitted for approval to the Health Committee of the League, the British member of that Committee made the explicit reservation that in assenting to it he expressed no opinion on the interpretation of the term "legitimate" in so far as it related to the use of opium in certain Eastern countries.

The habitual use of opium without medical prescription by certain sections of the native population in these countries stands in a category apart from the problems of the abuse of morphine, cocaine, and like preparations. Many of those who are acquainted with the countries in question, and whose knowledge and views must command respect, consider that in general the traditionally guided use of opium is no more harmful, or no less beneficial, to important sections of the population than is the reasonable and temperate use of alcoholic drinks or tobacco, equally without medical prescription, in certain countries of the West. Others urge the practical objection that in the regions concerned there would not be sufficient educated medical opinion to go round, or doubt whether even the soundest medical training and knowledge qualify their possessor for the dictatorship over the habits of individuals which it is proposed to impose on him in this matter. Such contentions may or may not be justified by the facts, but at least they seemed to demand more careful consideration and analysis of evidence than the Health Committee of the League was in position to obtain when the resolution was submitted.

In the work of this Committee I usually depend on three resources to deal with questions on which, as in this case, I cannot claim any special knowledge: (1) before going to Geneva, to get primed at home by those who know the subject; (2) to be guided at Geneva by those of my international colleagues who have special experience on the matter in hand; and (3) to rely upon a special expert study of the question previously made for the League and reported to the Committee. In this instance all three failed me. The Committee had no intimation beforehand of the resolution which was proposed; three of its members, all of whom have lived and worked in the East, were absent; and no special previous investigation on this aspect of the subject had been made for the information of the Committee or of the joint subcommittee. It is rare for the Health Committee to take its responsibilities as the expert advisory body of the League too light-heartedly, but I consider that it did so in relation to this one aspect of its resolution.

I am, Sir, yours faithfully,

London, March 12th, 1923. G. S. BUCHANAN.

## THE DISPENSING OF PRESCRIPTIONS.

*To the Editor of* THE LANCET.

SIR,—Having read Dr. G. Clark Trotter's letter in your issue of Feb. 24th on discrepancies in chemists' dispensing, as well as the many articles which have since appeared in the lay press, I feel there is a great deal to thrash out in this matter, and that it is of the greatest importance both to our own profession and to the public at large that this should be done thoroughly. There is evidently a large quantity of unstandardised B.P. preparations and drugs being manufactured and sold to-day. I remember when the Insurance Act first came into force I was flooded with advertisements from manufacturing chemists professing to be able to sell cheap drugs for insurance patients at a price at which they could never have been properly standardised; for standardisation is an expensive process. I had not worked as panel doctor long before I was called in to see an old patient whom I had frequently attended before for the same trouble, and she had always recovered in 24 hours. On this occasion I wrote out the same prescription I always gave her and sent it to the chemist. The next morning she was no better, the morning after that slightly worse, and she told me that she believed that being panel medicine it was not so good as I had always sent her previously. I was inclined to spurn this idea, but I told her I would see her mistress and suggest that I should send down a similar prescription in the name of a friend staying in the house as a guest. The patient began to improve with the first dose of the new bottle. I have had several cases similar to this.

What in my opinion is wanted is a set of regulations similar to those which control the dairy. Inspectors should be empowered to enter any wholesale or retail druggists' place and demand samples of any stock drug preparation for analysis, and if not up to B.P. standard the firm should be severely punished. A retired chemist not long ago told me that there was no law compelling a chemist to keep tinctures, extracts, infusions, &c., of the true B.P. strength, and that unless I specially signified "B.P. strength" on each prescription I wrote I could have no legal redress. The high duty on spir. vini rect. is no doubt the cause to some extent of the manufacture of worthless drugs which tempt the chemist.

What we want is first of all strict preparation of all medicines according to standards laid down in the British Pharmacopœia, and insistence under severe penalty that these regulations are carried out. Any discrepancy in a bottle of medicine could then only be the fault of the dispenser. A doctor not infrequently relies on the action of his medicine for a confirmation of his diagnosis. How many grave mistakes may be made through faulty drugs—mistakes which are difficult enough to avoid without such a handicap.

I am Sir, yours faithfully,

H. M. LEATHES, M.R.C.S., L.R.C.P.

West Drayton, Middlesex, March 11th, 1923.

## THE OPERATIVE TREATMENT OF SEPTIC MENINGITIS.

*To the Editor of* THE LANCET.

SIR,—The interesting communication on the above subject by Mr. H. L. Martyn in your issue of March 10th calls for congratulation, comment, and criticism. The term septic meningitis is unfortunately somewhat loosely used, with the result that there is often much confusion in the clinical record of cases by different writers. My personal opinion is that no case should be regarded as one of septic meningitis unless organisms are found in the cerebro-spinal fluid. In the absence of organisms I regard such cases as cases of serous meningitis, an entirely different clinical entity.

An experience of over 25 years of hospital work and of numerous opportunities of performing operations, for no other treatment is, in my opinion, of the slightest use, for the relief of septic meningitis, leads me to say that of all the intracranial complications following septic middle-ear disease, it is the most unfavourable and, operation or no operation, is almost invariably fatal. Mr. Martyn's successful case is, therefore, a milestone on the road of surgical progress. The fact that in his case a few Gram-positive diplococci were found in the lumbar fluid and also in fluid removed from the subarachnoid space of the posterior fossa, although subsequent cultures were sterile, indicates that the cerebro-spinal fluid was infected and that the case was one of early and genuine septic meningitis, although of limited extent and slight toxicity.

In a paper read in 1913 before the Section of Otology of the Royal Society of Medicine I emphasised the importance of a detailed chemical analysis of the cerebro-spinal fluid in suspected cases of meningitis, for the reason that even before clinical symptoms point to a diagnosis of meningitis a diagnosis of its imminent advent could be made. The various metabolic processes resulting from the disintegration of bacterial life tend to destroy the carbohydrates and proteins in the cerebro-spinal fluid. Kopetsky has also shown that so long as the fluid remains alkaline, even if slightly turbid, the prognosis after drainage is good, but should it become acid and markedly turbid the prognosis is very grave. In the early stages bacteria are by no means necessarily found in the fluid, but if it still has an alkaline reaction and is capable of reducing the copper in Fehling's solution no time should be lost in effecting one or other form of drainage. At the same time I recorded four cases where extensive decompression operations over the infected area, combined with drainage of the pia-arachnoid space with multiple strands of gauze, proved successful, and since that time I have had several other successful results.

All my cases were, however, early cases, the diagnosis being made mainly on the result of chemical and bacteriological examination without waiting for the advent of classical symptoms, and further, the process was, I believe, a localised one. Never in my experience has a case of generalised septic meningitis of otitic origin recovered, although I have performed extensive decompression operations, drained the cisterna magna (Hayne's operation), the subarachnoid space, often at more than one point, and effected translabyrinthine drainage. In advanced cases the impossibility of draining the numerous sulci into which the pia-arachnoid dips must be apparent to every surgeon. Given, however, an early case, a localised process, and a mild infection, the thorough removal of the primary focus of infection, combined with the establishment of free drainage, will undoubtedly be the means of saving a few lives.

An intelligent appreciation of impending pathological processes and a careful chemical examination of the cerebro-spinal fluid are, however, essential elements for operative success. If the patient is to have a chance the very earliest indications of a commencing meningitis must be recognised. My belief is that meningitis is the most difficult complication of ear disease to diagnose, more especially in its initial phases. Experience has unfortunately made me very doubtful of success in the treatment of septic meningitis in other than quite early and localised (!) infections.

Every successful operation is a surgical triumph, provided always that a sharp line is drawn between septic and serous meningitis. No doubt every case of septic meningitis is at one phase of its existence a case of serous meningitis. Infection may or may not occur. When it does the prognosis is bad—very bad if it is diffuse; when it does not, efficient drainage is in general satisfactory and should be carried out as a routine measure, as to rely upon lumbar puncture merely is futile.—I am, Sir, yours faithfully,

Manchester, March 11th, 1923. WILLIAM MILLIGAN.

## SMALL-POX AND AMAAS.

*To the Editor of* THE LANCET.

SIR,—Dr. de Korte, in THE LANCET of Jan. 13th, says "no one can affirm what the relationship between small-pox and amaas really is," and he appears to think that small-pox is not small-pox unless of a malignant type. It used to be common for mothers to tell their neighbours their children had not scarlet fever, but only scarlatina, and the same intent to deceive is shown by the invention of euphemisms like Kaffir-pox sour milk (amaas), or alastrim (whatever that means). Our natives do the same when they call it ihashelala, knowing full well they should say ingqakaqa.

I have been district surgeon here for 27 years, and nearly every year we have an outbreak of small-pox. The native population of about 36,000 is scattered over an area of 500 square miles. The type of disease has always been mild as regards children, and in all my time not more than a dozen have died of it. Unvaccinated children are highly susceptible, but usually show no more than 20 to 30 small pustules, and often there are fewer. If there be only one case at a kraal the vaccinated children escape; if several cases occur, the infection is more massive and vaccinated children in close contact may also have a mild attack. Men, being scarcely in contact with sick children when there are several separate huts at the kraal, have often escaped, although unprotected; but the older the patient the worse the disease, and to my knowledge an unvaccinated man died of confluent small-pox in 1906, while the small children at the same kraal had but a few spots. In that instance there was no question of two strains, as Dr. de Korte suggests; the only difference was in the age of the patient. Now that the advantages of vaccination are recognised there are, I think, but few adults left unprotected. The headmen are now alert to report when an outbreak occurs, and the neighbourhood is promptly vaccinated. The annual vaccination at various centres tends to keep the inflammable material within limits. In earlier years the disease was often unchecked for months, but even then the epidemic was local and tended to die out when the winter beer-drinking was over.

Before the days of district surgeons and vaccination there must have been similar mild epidemics year after year, but owing to the population being so scattered not sufficiently general to protect every person, and the year 1884 is a date to reckon from—the great epidemic of small-pox. The mortality was high, and the deeply pock-pitted survivors show how severe it was. 1886 was also a bad year, but the previous big epidemic was in 1849. I do not expect we shall have such a thing again in this vicinity. There is not likely to be any large accumulation of unvaccinated adults. For I believe it only requires passage through a sufficient number of adults to convert what is now a child's mild disease into the terror of pre-vaccination times.

I am, Sir, yours faithfully,

P. H. WALKER.

Mqanduli, C.P., South Africa, Feb. 17th, 1923.

## A FATAL CASE OF PRE-RENAL TOXÆMIA.

*To the Editor of* THE LANCET.

SIR,—In Dr. W. N. Goldschmidt's interesting report of a fatal case of pre-renal toxæmia, appearing in your columns of to-day's date, a clinical sign, possibly of enlightening significance, has been missed—I refer to the distension of the abdomen. Almost from the onset of the illness this was a very marked condition, but in the endeavour to elucidate the failure of the kidneys it is not mentioned in the report. It is plain, as Dr. Goldschmidt remarks, that the illness "was not accounted for primarily by the state of the kidneys." Yet that the function of the kidneys was early impaired is indicated, not only by the œdema, but by the oliguria, the presence of albumin, red blood cells, "and numerous granular, hyaline and epithelial casts." That impairment of function, without obvious, even microscopical, change in structure in the kidneys may occur we already know. McQuarrie and Whipple, in their paper on "Renal Function in Intestinal Obstruction," [1] have already pointed this out; but that impaired function should persist from January to June with so little change in the kidney as was found post mortem is interesting.

To what, then, is the kidney disability in this case to be attributed? Obviously not the heart. With a blood pressure of 132 mm. Hg on admission, the oliguria can scarcely be assigned to the state of the heart, which at the post-mortem several months later was found in a state of brown atrophy. The condition of the heart found at death was presumably the result of the condition of the patient during his illness, and the way he reacted to that illness—for

[1] Jour. Exper. Med., vol. xxix., 1919, p. 397.

one thing, the patient passed several months of uneasiness in bed, and towards the end (at least) vomited. Dr. Goldschmidt, in line with orthodox thought, attributes the illness (and presumably the kidney inefficiency) to a toxæmia; he titles the case one of "Pre-renal Toxæmia." But what is the evidence? Not the appearance of the kidneys five months after the play of such toxæmia, an appearance almost normal, with "all acute changes above described absent," and "chronic changes shown by thickening of capsule, only slight, as above," .... &c. Is it not time to push away an explanation which is only imaginary, and has only been imagined for want of a more tangible supposition—for this man took no poison. Abdominal distension was marked and troublesome, and must obviously have been persistently increased, and that such can cause impairment of kidney function is not difficult to imagine. Already we know that after severe exercise (and because of it) the urine of athletes contains albumin; and that the urine of women with child as the result of the strains of labour similarly often does so. A persistent increased pressure in the abdomen (and this patient had complained of swelling .... "of his 'stomach' and back for six weeks" .... before admission), if great enough may presumably have the same effect—not only impairing the kidneys but also the liver.

It happens that I saw, at the request of a colleague, a similar case. A man of 54 had marked abdominal distension, the girth at the umbilicus being 37½ in., mainly due to meteorism; but there was some free fluid, œdema of feet, diminished secretion of urine, and albuminuria with casts. I thought the patient must have some malignant obstruction in his colon and that the increased intra-abdominal pressure was the essential cause of the kidney deficiency. The pressure in the rectum with the patient on his side was 30 mm. Hg (instead of 6 mm. Hg); in Sims's position it was 26 mm. Hg (instead of being negative or zero); and when on his back it was still 30 mm. Hg (instead of 10 to 14 mm. Hg). I advised draining the gut (cæcostomy), by which operation the colon could have been explored; but this course was not taken, mainly, I think, because the urine contained albumin. From reading Dr. Goldschmidt's report, I find I was probably wrong in suspecting malignant disease in my case; but in Dr. Goldschmidt's case the "sigmoid colon" was "contracted, apparently by thickening of the bowel wall ....; no evidence of ulceration or evident scarring" being present. To the state of the sigmoid, presumably, the abdominal distension was due. Drainage of the intestinal tract was (apparently) not considered, but the presence of albumin in the urine obviously did not prevent this, the patient having decapsulation of the kidney first on one side and later on the other performed. I think my conception is supported by the effects of these operations: it is not suprising the kidney capsule was not tense—how could the kidney swell if it be compressed sufficiently? The improvement which occurred, however, perhaps was due less to the decapsulations than to the release of two to three pints of intraperitoneal fluid in the first case and to "several pints" in the second. That complete relief was not afforded, that the illness terminated fatally, may well be explained by the persistence of the primary condition (meteorism), to which were superadded the effects of the presumable post-anæsthetic vomiting, and of the vomiting which of itself later ensued. I have already striven to urge the physiological significance of the intra-abdominal pressure, but the idea is pooh-poohed. We believe the intra-thoracic pressure is negative for physiological reasons, but that the intra-abdominal pressure is positive for the same reason is not yet allowed. That pathological changes in this pressure are instrumental in causing disease I am still striving to show; that in time it will be admitted is my opinion.

I am, Sir, yours faithfully,

R. H. PARAMORE, F.R.C.S. Eng.

Brook-street, W., March 10th, 1923.

## SOME LETTERS TO SIR PATRICK MANSON.

*To the Editor of* THE LANCET.

SIR,—Please excuse my troubling you on a small matter, but in your issue of Feb. 24th, when referring to the Tropical Diseases Library, you mentioned that "the original letters addressed to him (Sir Patrick Manson) by Sir Ronald Ross during the latter's researches on the transmission of malaria in India in 1897–98" are in the said library. I see that this matter has been repeated in several provincial newspapers and should like to say that only half the letters are in the library, the remainder being with me, and also that the School of Tropical Medicine has promised me that these documents shall not be available for readers. I am very doubtful as to the propriety of private letters being left open in public institutions during the lifetime of the writer, and, indeed, have reasons to be dubious regarding the legal aspect of the matter. I am, Sir, yours faithfully,

RONALD ROSS.

Buckingham Palace Mansions, S.W., March 9th, 1923.

*** We share Sir Ronald Ross's doubt.—ED. L.

## THE LAWS OF THERAPEUTIC IMMUNISATION.

*To the Editor of* THE LANCET.

SIR,—I wish to challenge certain of the "laws" contained in the St. Mary's Hospital "Codes" concerning therapeutic immunisation.[1]

Code No. 2. 1: "It cannot in any form of inoculation be theoretically essential to employ vaccines made directly from the patient." Certainly not if (*a*) you can be certain that you have got the microbe causing the disease; (*b*) that the microbe is of the same strain as the infecting microbe; (*c*) that the infection is an unmixed one. How often do those using stock antigens ascertain by bacteriological examination the infection they are dealing with or if they do, ascertain by serological tests, if specific sera are available, whether they are dealing with the proper strain? Is an antibacterial serum of any practical use in meningitis or pneumonia if it is not produced by the specific strain? It is not. Further, if stock antigens are so successful, why were they such a complete failure in the treatment of wound infections during the war, and why had Sir Almroth Wright to resort to the feeble method of salt solutions? I have never been able to get these questions answered.

Code No. 2. 3: "They [microbial antigens] may be therapeutically employed in all localised infections other than those complicated by pyrexia," and later on Sir Almroth Wright states most definitely that active immunisation is not possible in acute infections such as staphylococcal and streptococcal septicæmias, puerperal fever, for instance, and pneumonia. He writes as if microbes in the blood-stream had free access to the tissues, could pass at will through the barrier of the endothelial cells. This, of course, is not the case, it is only in those overwhelming hæmorrhagic infections where there is endotheliolysis or at the end of chronic infections where their resistance is gradually broken down that active immunisation fails. It is just in these acute infections of every kind, enteric, pneumonia, meningitis, pyelonephritis, wound septicæmias, and so on that one gets such dramatic results, just as dramatic as, if not more so than, the results obtained in diphtheria by antidiphtheritic serum. But the antigens must be specific and must be complete. I have frequently demonstrated this. I have failed when I used a sister's antigens in enteric and meningitis and succeeded dramatically when autogenous ones were used. I have failed to get results in numberless cases of every kind, and found my want of success was due to the failure to isolate an essential microbe. The reaction to these specific antigens is charmingly delicate. Sir Almroth Wright speaks as if "localised" infections were really localised. They constantly are

[1] Sir Almroth Wright and Others: THE LANCET, Feb. 24th, 1923.

not, and boils and the like are manifestations of chronic septicæmias; he will be surprised how often the cause of an obscure infection can be found in the urine, practically always in boils, rheumatism, and so on. Quite recently I have isolated the cause of a chronic iritis of one eye from the urine.

No one ever supposed that the granules of various kinds in leucocytes were there for no purpose; one always supposed they were of the nature of proenzymes and that they were shed out at need. Of course, the animal organism has non-specific methods of defence. It is the duty of the immunisation to make these defences specific. May I repeat here again the factors that are necessary for success in therapeutic immunisation, so that Sir Almroth Wright may challenge them if he wants to.

1. The antigen must be adequate—it must be of the right strain or strains and must be virulent so that antitoxins can be produced.

2. It must be complete—that is, contain all the kinds of microbes causing the infections.

3. The doses must be given at suitable intervals—that is, not during the negative phase.

4. A dose must be attained such that sufficient specific antibodies are produced to combat the infection present.

5. The patient must be capable of response to the stimulus.

In an address before the Royal Society some years ago Sir Almroth Wright stated that microbial antigens were of little use in chronic infections. This also is not the case. If the foregoing rules are followed just as great success is obtainable in chronic infections of every kind, but a much higher degree of immunity must be reached.

No one will be convinced of the truth of my assertions until he has either tried my methods or until I have demonstrated them. I shall be very glad to demonstrate them at St. Mary's Hospital or any other convenient place, and am quite prepared to stand or fall by the results. I apologise for the length of this letter, but the subject is of the first importance.

I am, Sir, yours faithfully,
W. M. CROFTON.

Laboratory of Special Pathology, University College, Dublin, Feb. 26th, 1923.

## DOCTORS AND BLIND MASSEURS.

*To the Editor of* THE LANCET.

SIR,—I am much interested in the work of the Association of Certificated Blind Masseurs, of which I have the pleasure to be President. It has recently published leaflets giving the addresses of its members in London and all parts of the British Isles. May I venture to suggest that all registered medical practitioners should obtain copies from the Secretary of the Association, 224–6–8, Great Portland-street, London, W. 1? These leaflets show that members of the Association, both masseurs and masseuses, are established in practically all the large towns, as well as in all parts of London and the suburbs. As massage is work which, it is generally recognised, can be most efficiently carried out by blind people properly trained, those doctors who can see their way to the employment of members of this Association will be aiding in a work of national importance.

I am, Sir, yours faithfully,
Liverpool, March 8th, 1923. ROBERT JONES.

## GANGRENE OF THE TOES FOLLOWING CONSUMPTION OF ERGOTISED RYE BREAD.

*To the Editor of* THE LANCET.

SIR,—Dr. Parkes Weber's letter in your issue of March 3rd affords us the opportunity of stating that our investigations of the case of gangrene associated with the eating of rye bread are not yet completed. We are bearing in mind the cases of gangrene—thrombo-angiitis obliterans—reported amongst Jews by Dr. Parkes Weber and others. The ætiology of thrombo-angiitis obliterans is admittedly obscure and excessive cigarette-smoking seems an insufficient ætiological factor, whereas, in the case recorded by us of gangrene of corresponding toes in succeeding autumns, it has been proved that the rye bread, which he was in the habit of eating, contained active ergot and was capable of producing cyanosis of the cock's comb. To the naked eye the rye bread did not show evidence of contamination, and it would be of interest to know on what grounds Dr. Parkes Weber excluded the possibility of ergotism as an ætiological factor in his cases.—We are, Sir, yours faithfully,

R. E. KELLY,
Liverpool, March 7th, 1923. W. J. DILLING.

## HOSPITAL SAVINGS ASSOCIATION.

*To the Editor of* THE LANCET.

SIR,—A brief reply to the letter of Lord Hambleden on the above subject seems necessary. His answers to the five points given in the letter from Mr. F. W. Davy and Dr. H. Campbell, published in your issue of Feb. 3rd, leave much to be discussed.

1. It was stated that the scheme creates a self-interested body which would seriously interfere with the present independent management of hospitals. Lord Hambleden says it will do nothing of the kind. If the scheme be generally adopted, however, a body, which may be constituted of hospital patients up to two-thirds of its total strength, will eventually have under its control the disposal of the funds which its members have contributed. Pressure brought on boards of management by such bodies, whatever its effect, must of necessity create a new element, not to be confused with the admirable practice of endeavouring to directly associate wage earners with management by the presence of working men as members of committees.

2. Lord Hambleden states that "It is not an insurance scheme." It is not, but it imports, despite all statements to the contrary, an element of insurance risk—a risk shared alike by both hospital and contributor—importing also every defect of insurance with none of its advantages.

3. With regard to almoner inquiries, Lord Hambleden's reply would convey the impression that the scheme merely relieves hospitals of this troublesome routine duty, by arranging for it to be done by the local branches of the association. On examination of the organisation of existing branches I find that the person charged with this responsible duty is to be chosen by the patients themselves in the following manner. "Call a meeting in the workshop ... put a resolution and get the scheme adopted. Agree on a secretary who will be supplied with vouchers available for yourselves and families." Hospitals are thus asked to substitute this delegate for their own trained officials.

4. Lord Hambleden evades the importance of dealing with the question of payment of medical staffs which the adoption of the scheme necessitates, by stating that this is merely "a question of hospital management." It certainly is, but is one of a gravity which would not have to be faced did not the scheme force it forward. Adopt the scheme and there can be but one consequence—viz., a claim for payment for services from some members of the hitherto honorary medical staffs, which would logically involve payment to all, and this undoubtedly would be distasteful to a majority of those holding honorary hospital appointments in London.

5. How hospitals, which are to be controlled by workshop committees, in which the inquiry work is to be done by patients and in which the medical staffs are paid, are to recognise themselves as being still within the "voluntary system" should be explained by the Hospital Savings Association.

I am, Sir, yours faithfully,
March 9th. A SECRETARY OF A LONDON HOSPITAL.

## WOMEN IN THE POST OFFICE MEDICAL DEPARTMENT.

*To the Editor of* THE LANCET.

SIR,—May I ask you to be good enough to allow me to reply briefly to the singularly misleading remarks which appear in the letter signed "Clericus" in your issue of March 10th.

He accepts as an axiom the statement that "women cheapen labour." This, however, is only true when women are offered and accept lower pay than men for the same work. It is obviously untrue where an equal standard of payment is maintained. The contention of the Medical Women's Federation is that the traditional loyalties of the medical profession demand that its members stand by each other in refusing to accept a standard of remuneration in public service which is deemed inadequate by the profession as a whole. If medical women in any number should depart from this standard of conduct one of two results would follow: either the work of the public services would fall more largely into the hands of women through demands for economy, or their men colleagues would eventually be driven to accept a similar low rate of pay.

That the resistance of organisations of medical women to inequality of treatment checks any tendency to lower standards was shown when the Board of Education advertised for men and women to fill the posts of school medical officers, offering a lower salary to women. Through the efforts of the London Association of Registered Medical Women, qualified women refused posts on those terms, and with the loyal coöperation of many men in the profession the resistance was successful. The higher standard was secured and has been maintained since for men and women alike.

Again "Clericus" suggests that women with higher qualifications and hospital experience are not available for work in the Post Office service, but he does not explain why this is the case. It is significant that when an unequal standard was introduced in a post advertised in 1911, several women with university degrees and hospital experience withdrew their applications, and we maintain that public services suffer when conditions are such that the more highly qualified candidates are not forthcoming. Since the same post became vacant in 1914 no advertisements for medical women have appeared; the post has been filled by invitation or chance application, and not by open competition. Women with higher qualifications have therefore had no opportunity to apply had they been willing to do so.

The Medical Women's Federation do not dispute the justice of demanding a higher standard of qualification and experience for the more highly paid posts. They do, however, believe that it is inimical to the welfare of the medical profession and of the general public to base the standard of pay on the sex of the individual instead of on his or her qualifications and experience. It is scarcely necessary to reply to the assumption that "no woman could possibly perform the duty of attending to accidents of all kinds and degrees with other complicated work" since they have done such work for years in many hospitals and are doing it in increasing numbers every year.—I am, Sir, yours faithfully,

FLORENCE E. BARRETT.
President of the Medical Women's Federation.

9, Clifford-street, London, W. 1, March 13th, 1923.

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*To the Editor of* THE LANCET.

SIR,—I should be glad if you would allow me a short space to comment on the letter of "Clericus" in your issue of March 10th, lest his statements if uncontradicted should be accepted as truths. It is, however, difficult to meet such a blend of "inside information," distortion, and inaccuracy. I am unable to say what changes were made in 1883 in the salaries of men medical officers, but a medical woman was then appointed and her salary was, I believe, the third highest in the medical department, and after 40 years this relative position still obtains—so, according to the arguments of "Clericus" himself, this business Post Office presumably considers that the work of medical women is not without value.

From 1883 to 1895 only one medical woman was employed. In 1895 two new posts for assistant medical officers were created, for a man and a woman respectively, each with the same salary—viz., £200–£300. No change was made till 1911, when again a fresh post was created on each side, but the scales were then altered so that the man was offered £180–£400 and the woman £180–£300. Several of the women candidates withdrew their applications when they heard of this difference. Between 1883 and 1914 five medical women in all had entered the service but three had retired, one on pension on reaching the age-limit and two resigned voluntarily to take up more congenial work. The letter of the Medical Women's Federation referred only to retirement on pension, not to voluntary resignation. Since the last resignation in 1914, the war intervening, there were no fresh permanent appointments made until last year, the work being carried on for nearly eight years by the two remaining permanent officers and a succession of locum tenentes. It is therefore not correct to say that only one resignation has occurred in 41 years and the deduction therefrom is not valid; but this statement was probably due to a misunderstanding.

With one exception all the women medical officers have had university degrees; all of them had held such resident posts in hospitals—two of them, at least, in large general hospitals—and in infirmaries or other institutions, as were open to women; the average age on appointment was 28. A reference to the last advertisement for a male medical officer will show that no such conditions as those mentioned by "Clericus" were imposed, but as there were a very large number of applicants the authorities naturally and rightly selected those with the best qualifications and experience and gave the preference to men who had served in the war. The last appointments for women were made under exceptional circumstances, but even so "Clericus" is inaccurate both as regards age and experience and he treats one exception as a normal condition.

I do not think that anyone, who really knows, would say that the women medical officers do less work than the men, and for the most part their duties are strictly comparable in nature. The men certainly have under their supervision a very much larger proportion of staff engaged in more or less heavy manual labour and therefore naturally more liable to accidents, but even women sometimes fall downstairs or through a skylight or have pulmonary or other hæmorrhages, and whatever wounds, fractures or other mischances occur amongst the 14,000 women under the charge of the women medical officers are dealt with by them. Claims for injuries against the Post Office, workmen's compensation cases, and cases of industrial fatigue are also dealt with by the women medical officers. They are not usually required to visit provincial offices, but when a special report on the work of telephonists was called for some years ago the senior woman medical officer was included in the Commission of Inquiry which visited large exchanges in various parts of the country from Glasgow to Cardiff.

The present Principal Woman Medical Officer was originally appointed as Assistant Medical Officer in 1895 at £200–£300, like all her men and women colleagues who were appointed as Assistant Medical Officers between 1895 and the earlier part of 1911. An appointment in 1889 under different conditions has nothing to do with the argument.

I am, Sir, yours faithfully,

March 13th, 1923. MEDICA.

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Mr. Neville Chamberlain, Minister of Health, has appointed Mr. Douglas Veale of the Ministry of Health to be his private secretary.

# Obituary.

## NORMAN DALTON, M.D., F.R.C.P. LOND., M.R.C.S. ENG.,

CONSULTING PHYSICIAN TO KING'S COLLEGE HOSPITAL.

Dr. Norman Dalton, who until last year was senior physician to King's College Hospital, died on March 9th, at the age of 65. He was the last surviving son of the late Dr. E. T. E. Dalton, postmaster of British Guiana, and was educated in the colony and afterwards at Christ's College, Finchley. Later he entered King's College, London, and qualified M.R.C.S. Eng. and L.S.A. in 1879. In 1880 he graduated M.B. Lond., with honours in medicine and obstetric medicine, and two years later proceeded to the M.D. degree. He became a Member of the Royal College of Physicians of London in 1886, and in the same year was appointed assistant physician to King's College Hospital, becoming full physician in 1900. He obtained the Fellowship of the Royal College of Physicians in 1894. Norman Dalton was a Fellow of King's College, where he was at one time professor of pathology and anatomy, and later joint lecturer in medicine at the medical school. He also held the post of examiner in medicine in the University of London and to the Conjoint Board; he was physician to the National Provident Institution for Mutual Life Assurance and medical officer to the London branch of the Scottish Union and National Insurance Company. He was consulting physician to the Thames Ditton Cottage Hospital, physician to the Public Dispensary, Drury-lane, London, and honorary surgeon to the North-East London Hospital for Children. He was at one time lieutenant-colonel in the Territorial army.

A colleague writes: "The death of Norman Dalton will be deeply regretted by a wide circle of friends to whom his simple and unaffected nature had endeared him. Many generations of old King's students to whom he had been not only a popular teacher but a close friend and a valued adviser will also mourn his loss. As a medical student small in stature and none too robust in health, he was attracted to the more intellectual rather than to the athletic side of hospital life. From an early period he began to make his mark as a close, painstaking observer endowed not only with the power of learning but with the ability to impart knowledge to others. When appointed to the staff of his hospital he became a most popular teacher of medicine. There was about him a spirit of personal friendly interest in all who came into contact with him that made even the most junior students feel that he was their friend as well as their teacher, that their interests were his, and that he had a personal gratification in their success. The affectionate sobriquet of "little Dolly" by which he was known to generations of King's men bears witness to the personal esteem in which he was held. In him we lose one of the older school of physicians, for he was a man whose chief interest lay in the purely clinical side of his work. His early medical education was acquired before bacteriology or clinical pathology had made their influence felt, and though he, like everyone else, had to acknowledge their importance, his innate conservatism always kept him true to his early ideals, observation at the bedside and in the post-mortem room. As a clinical observer he was shrewd, sound, and painstaking to the last degree. His opinion was sought and valued by all who saw his work; his teaching, if slightly dogmatic, was lucid, precise, and most helpful to the younger men.

"Dalton was perhaps most in his element in the post-mortem room. For many years he was professor of morbid anatomy, and his tenure of office lasted right up to the removal of the hospital to Denmark Hill, when the work increased beyond his power to cope with it. He never wrote much; he was in every way averse from the jostling and pushing of modern life. Anything that savoured of advertisement or self-seeking was abhorrent to him. He was content to do his work as well as he could, and he did it with as little fuss as possible. He was apt to be distrustful of new theories and new movements, and the decision to uproot the old hospital that he had served for so many years from its dingy and inadequate quarters in Portugal-street to its new site at Denmark Hill caused him much anxiety; however, he was one of the first to acknowledge and rejoice in the success that followed the experiment. The war tried him severely, but he was able to complete his term of office on the active staff of the hospital, retiring at the age of 65 last summer. None among those who have been educated within its walls could have been more jealous of the honour or more zealous for the advancement of King's College Hospital. We mourn the loss of a loyal friend, a sound teacher, and a most upright and single-minded colleague."

## LAURENCE BRUCE ROBERTSON, B.A., M.B. TORONTO, F.A.C.S.

Major Bruce Robertson, whose death is reported from Toronto, was assistant surgeon to the Hospital for Sick Children at Toronto and assistant in clinical surgery and demonstrator of anatomy in the Faculty of Medicine. Never a strong man, he nevertheless attained a high reputation as a skilled and kindly surgeon. He was best known to Englishmen as the surgical specialist to No. 2 Canadian Casualty Clearing Station, which was situated at Rémy Siding, near Poperinghe, during the campaign of 1917. Over 30,000 casualties passed through his station during this period and 6000 major operations were performed. He took a great interest in blood transfusion on which he wrote a number of pamphlets. He was among the first, if not actually the first, to use this method in the British Army, and he did much to familiarise British surgeons with this valuable method of bringing back to life men who were on the verge of death. He broke down under the strain, and it seems probable that his death at the early age of 37 years was due to his exertions on behalf of the wounded.

## JOHN YOUNG, M.D. GLASG., L.R.C.S. EDIN.

WITH the death of Dr. J. Young, at the age of 86, there passed away almost the last of the older generation of medical men who were lecturers at the early Sheffield School of Medicine in Surrey-street. Dr. Young qualified L.R.C.S. Edin. in 1863 from the University of Glasgow, taking his M.D. Glasgow in 1865. He settled in practice at Sheffield and for some years in the "eighties" he lectured on materia medica during the summer session at 8 A.M. to students of the medical school, alternating with the lecturer on botany, the late Edward Birks. This work, like that of all the teaching staff in those days, was honorary, but whereas most of the other lecturers held hospital appointments and as such found it desirable to keep in touch with students, in Young's case there was no such stimulus. He was in general practice throughout and never held any hospital appointment in Sheffield. His enthusiasm may probably be attributed to an extreme energy and an instinctive love of teaching. His interest in the medical school never ceased. For years he was an active and constant attendant at its council meetings and a keen supporter of its development. Until quite recent years he was to be seen at the annual meetings of the Court of the University.

Dr. Young was an honourable, hard-working, conscientious practitioner of the best type, and many young Sheffield doctors have owed him a debt of gratitude.

PRESENTATION TO A MEDICAL MAN.—On March 8th, at the North British Station Hotel, Edinburgh, Dr. A. A. Matheson was presented with an illuminated address and silver tea service, and Mrs. Matheson received a fitted dressing case. The presentation was made on behalf of the Jewish community to which Dr. Matheson has been medical adviser for many years.

# Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At an ordinary Council meeting, held on March 8th, Sir Anthony Bowlby being in the chair, a report from the Board of Examiners in Dental Surgery was read, respecting candidates found qualified for the Licence in Dental Surgery and Licences were granted to 73 candidates, whose names are given below.—Mr. H. S. Clogg was elected a member of the Court of Examiners to fill the vacancy caused by the resignation of Mr. James Sherren.—The Council accepted with appreciation the gift by Sir John Bland-Sutton to the College of a copy by Mr. Dorofield Hardy of the portrait of John Hunter by Robert Home.—Mr. V. Warren Low was appointed a representative of the College on the Senate of the University of London for the period from May 8th next to the second Tuesday in May, 1927, in the vacancy occasioned by the retirement of Mr. F. F. Burghard.—Dr. W. S. A. Griffith was re-elected the representative of the College on the Central Midwives Board for the period of one year from March 31st, 1923.

Licences to practise dentistry were conferred upon the following candidates, who have passed the requisite examinations and have complied with the by-laws:—

A. M. Abercrombie, Birmingham; P. K. Albertyn, Guy's; F. W. Barton, Royal Dental; Mabel H. B. Blakesley, Univ. Coll.; E. A. J. Bradley, Guy's; A. E. Butler, Manchester; B. J. Cilliers and H. A. Clarke, Guy's; H. Cole, F. W. H. Cowper, H. I. Dingle, P. Domb, and H. F. Dunkin, Royal Dental; B. G. E. Evetts, London; C. D. Farris, Guy's; G. F. Ferris and J. Fletcher, Royal Dental; W. R. Gray, Univ. Coll.; D. W. Griffith, Guy's; Helene M. Gubb, Royal Dental; R. Hofmeyr, Guy's; M. L. Hooker, Univ. Coll.; S. G. House, Bristol; W. F. Howe, Guy's; Ida Jacob and S. A. Jollye, Royal Dental; J. E. Jones, Guy's; T. W. Jones, Royal Dental; F. A. Kerrison, Guy's; G. R. Kull, Royal Dental; M. S. Lewin, London; S. E. Lewis, E. A. Lloyd, and J. B. Maree, Guy's; L. R. Marsh and H. K. Mason, Univ. Coll.; R. Maxwell, R. C. May, H. S. Murray, and S. R. Mutch, Guy's; J. Newman, Manchester; A. M. Nodine, Royal Dental; D. W. C. Northfield, L. B. Osborne, and J. R. Palfrey, Guy's; A. R. Parkin, Sheffield; F. R. Payne, Guy's; B. Peacock, Durham; H. L. Poland, Royal Dental; C. T. Pomeroy and A. W. Reynolds, Guy's; J. Robinson, Royal Dental; F. A. Sampson, Guy's; E. Samson, Middlesex; W. O. Sims and E. G. Smallbone, Guy's; Kathleen C. Smyth, Royal Free; J. L. Soutter, Univ. Coll.; P. A. Tucker and C. P. Urbani, Guy's; J. G. H. Vidler, Royal Dental; O. R. Vignale, Univ. Coll.; F. A. Walker, Guy's; V. D. Walker, London; R. P. Wall, Royal Dental; E. S. Walmsley, Guy's; R. O. Warner, Sheffield; A. R. Webber, London; W. A. Windsor, Univ. Coll.; B. T. Wyatt, Royal Dental; W. E. Zobel, Univ. Coll.; and G. Zondagh and I. M. Zondagh, Guy's.

HARVEIAN SOCIETY.—A meeting will be held at Paddington Town Hall on March 22nd, at 8.30 P.M., when a discussion on the Treatment of Duodenal Ulcer, Operative and Post-operative, will be opened by Sir Berkeley Moynihan, to be followed by Dr. Arthur Hurst, Mr. James Sherren, Dr. Robert Hutchison, and Dr. Moreland McCrea.

HUNTERIAN SOCIETY.—The Hunterian Oration on the Evolution of the Modern Views on Septic Peritonitis and its Applications will be delivered by Mr. H. W. Carson on March 19th, at 8.30 P.M., at the Mansion House. A discussion will follow. Among those intending to take part are Mr. T. H. Openshaw, Dr. L. S. Dudgeon, Mr. Percy Sargent, Mr. J. D. Malcolm, Mr. Girling Ball, and Mr. C. H. Fagge.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held at 11, Chandos-street, Cavendish-square, London, W. 1, 34 cases were considered, and £506 10*s.* was voted to 32 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 70, of L.M. Dub. and L.A.H. Dub., 1878, who practised in Ireland and died in 1895. Applicant has two married daughters, but they are unable to render her any assistance. For some time past she has been able to pay her way, but a granddaughter, her sole support, is now out of work and they owe rent. Applicant's only income Old Age Pension. Voted £26, £8 paid to meet rent and the balance in monthly instalments.

L.R.C.P. Lond. 1889, L.S.A., 1888, aged 60, married, two children. Applicant unable to attend to his practice owing to indisposition caused by a fracture of neck of right thigh bone through falling unconscious on deck during a voyage for his health. This joint was affected with chronic rheumatic arthritis contracted in 1915 when in cavalry on East Coast. Voted £25.

Daughter, aged 58, of L.S.A., 1870, M.R.C.S., 1873, who practised in Sheffield and Kent and died in 1920. Through the embezzlement of the bulk of the late father's estate by solicitor, the applicant and her two sisters find themselves in very reduced circumstances, and they have only £67 per annum to live on at present while the small amount of capital lasts. Voted £12 in 12 instalments.

Daughter, aged 18, of M.D. Dub., 1898, L.S.A., 1895, who practised in Birmingham and died in 1922. Applicant left school in July, 1922, and took a post as children's nurse at £36 per annum. She asks the Fund to give her a grant towards training and maintenance to be able to secure a good appointment and become quite self-supporting. Applicant's mother is delicate and has only £120 a year derived from sale of practice and is unable to help to any extent. Voted £25 and referred to Guild.

Wife, aged 52, of L.R.C.P. & S.I., 1894. Applicant's husband was in the Army of Occupation, he had a stroke in March, 1922, and was demobilised in August, 1922, and is trying for a pension. He is still in hospital and has to pay 4*s.* 6*d.* per day. The daughter is seeking a post as secretary and the mother is doing all she can to keep the home together. The small amount of capital is rapidly diminishing to meet expenses. Voted £20.

Wife, aged 48, of M.R.C.S. Eng. and L.S.A., 1886, who practised in Leeds. Applicant's husband had a stroke in May, 1922, and they are obliged to leave the house to make room for successor. They have been living on their savings up to now. Applicant has had the offer of a house to be able to take resident patients and asks the Fund for money to pay the quarter's rent required in advance. Voted £20.

Widow, aged 57, of L.R.C.P. & S.I., 1879, who practised in Kent and died in 1901. Owing to the death of mother and a cousin, whose annuities ceased at their death, applicant is now without any means and is dependent on friends. Voted £18 in four instalments.

L.R.C.S.I., 1871, aged 74, who practised in Yorkshire. Wife is suffering from cancer and not expected to live more than a few weeks. Applicant injured at sea in Mercantile Marine, 1917, and now suffering from want of nourishment. Voted £26 in 12 instalments.

Subscriptions may be sent to the hon. treasurer, Sir Charters Symonds, K.B.E., F.R.C.S., M.S., M.D., at 11, Chandos-street, Cavendish-square, London, W. 1.

INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY. The first annual meeting was held at the house of the Royal Society of Medicine on March 8th, Dr. Fortescue Fox, President for the year, in the chair. Members were present from Bath, Buxton, and Harrogate, as well as from France, Switzerland, and Czecho-Slovakia. A representative for Hungary was elected, making a total of 18 countries represented; 15 new members were also elected. A new rule was passed, widening the basis of membership in the society. A letter from Prof. Barduzzi, of Sienna, was presented, advocating a more systematic teaching of hydrology. It was agreed to publish the *Archives of Medical Hydrology*, which are circulated in 58 countries, three times in the current year. Dr. Ladislas Schmidt, of Pistany, Czecho-Slovakia, read a paper by himself and Dr. Ed. Weisz on the use of hyperthermal radio-active mud as a method of home treatment.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—The ninth annual conference will be held at Birmingham on July 12th and 13th, and will be presided over by Sir Arthur Stanley, Chairman of Council of the Association. On the 12th the morning session will be devoted to a discussion on the Care of Advanced Cases of Tuberculosis, especially as Regards Prevention of Infection: in the afternoon the Extent and Nature of Damage Done by Tuberculosis Derived from Infected Milk and Methods of Prevention will be dealt with. On the 13th in the morning the Relative Prevalence of Tuberculosis Among Workers in Different Trades, and Methods which are Likely to Reduce the Incidence in Special Trades will engage the attention of delegates, and in the afternoon Proposed Amendments of Procedure in the Notification of Tuberculosis. Among the medical men who have already promised to take part are Sir Gilbert Barling, Prof. E. L. Collis, Dr. G. Lissant Cox, Prof. S. Lyle Cummins, Dr. W. H. Davison, Dr. R. Dudfield, Dr. John Fraser, Sir Henry Gauvain, Dr. Fergus Hewat, Dr. H. W. McConnel, Dr. A. S. M. Macgregor, Dr. F. N. Kay Menzies, Dr. Marcus Paterson, Sir Robert Philip, Dr. Nathan Raw, Prof. John Robertson, Dr. William Robertson, and Dr. Cecil Wall. An address on the Actual Position of the Tuberculosis Problem To-day will be delivered on the evening of July 13th. A special meeting will be held to discuss the important subject of the Work of Tuberculosis Care Committees. The conference is open to all bodies concerned in any way with the subject of tuberculosis and to all other interested persons. Further information may be obtained from the secretary of the Association at 20, Hanover-square, London, W. 1.

YARMOUTH HOSPITAL AND CONVALESCENT HOME. At the annual meeting held on March 1st the board of management reported that the townspeople continued to support the hospital loyally, with the result that the income was well maintained. The report only covered the last seven months, during which period 392 patients were admitted, in addition to 43 remaining under treatment on May 31st, making a total of 435. The daily number of beds occupied was 48, compared with 45·4 for the preceding 12 months. The number of operations was 167. New medical and surgical out-patients numbered 349, and there were 1026 new cases treated in the casualty department.

In the dental department 116 cases were treated; there were 121 new ophthalmic cases, and 97 new patients in the X ray department. The total income of the hospital from ordinary sources was £5054 3s. Substantial support was given to the institution by most of the employees of the business houses and factories, and by the majority of the residents in villages served by the hospital. The annual meeting of subscribers to the Yarmouth Convalescent Home was held on Feb. 28th. The secretary stated that unfavourable weather caused a smaller number of admissions last year than in 1921, but London sent 224 children, Norwich 62, and other places 21—a total of 307. The financial statement showed a total expenditure of £1059. On the income side, subscriptions amounted to £478; donations, £56; Hospital Saturday Fund, £155; church collections, £10 15s. 6d.; dividends, &c., £137; patients' payments, £202, showing a deficit of £19 1s. 2d. Yarmouth's high position among health resorts for average sunshine was a great asset to the home. This was shown by the rapid progress of the children's convalescence, and by the large number of cases of complete recovery.

CHELSEA CLINICAL SOCIETY.—The annual debate of this Society will be held in the Club Room of St. George's Hospital Medical School, London, S.W., on March 20th, at 8.15 P.M., when a discussion on Visceroptosis will be opened by Sir Charlton Briscoe, who will be followed by Dr. Robert Hutchison, Mr. Ivor Back, and Mr. Mortimer Woolf.

THE Council of the Royal Institution of Mining and Metallurgy have awarded to Dr. Leonard Hill a gold medal, instituted by the Consolidated Gold Fields of South Africa, Ltd., in recognition of his valuable researches on ventilation, and in particular of his paper, Ventilation and Human Efficiency, contributed to the Transactions of the Institution.

THE IRISH LOCAL GOVERNMENT (TEMPORARY PROVISIONS) BILL.—There is some reason to believe, our Irish correspondent writes, that certain of the clauses of the Local Government (Temporary Provisions) Bill, at present before the Parliament of the Free State, are ultra vires in that they appear to run counter to the terms of the treaty, which is embodied in the Constitution of the Free State. Mr. T. Hennessy, honorary secretary of the Irish Medical Committee, makes a good case for this view in a letter to the press published last week. He points out that the Bill deprives certain public officers of rights conferred on them by the Local Government (Ireland) Bill of 1919. But the treaty provides that public officers shall not be treated worse than under the Government of Ireland Act of 1920, and that Act in its turn secures to public officers all rights and privileges conferred on them by successive Local Government Acts, including that of 1919. It is probable that this view of the case, which was not put before the Dail during its debates, will receive due attention in the Senate.

DONATIONS AND BEQUESTS.—The Chelsea Hospital for Women has received a grant of £500 from the trustees of the Zunz bequest, and £10 from the "Prosperity" Trust.—The late Mrs. James Wood, of Willaston, Nantwich, who left £18,000, the income of which is to be paid to her aged sister for life. On this lady's death £500 is to be paid by the trustees to the Nantwich Cottage Hospital, and £1000 to the Crewe Cottage Hospital. The residue of the estate, about £15,000, is to be devoted to such charitable objects as the trustees shall decide at Nantwich, Crewe, and Willaston.—By the will of the late Dr. T. H. Kellock, surgeon to the Middlesex Hospital, the testator left £500 to the Hospital for Sick Children, Great Ormond-street, to be expended, if possible, in some specific object which shall not increase the annual expenditure of the hospital; £100 to that hospital as a permanent endowment of the Medal for the Nurses' Prize instituted by him; £100 each to the Santa Claus Convalescent Home for Children, Highgate, N., the Invalid Children's Aid Association, and the National Society for the Prevention of Cruelty to Children; and £50 each to Miss Sharman's Orphan's Homes, Southwark, S.E., and the St. Giles Christian Mission.—The late Mr. John Edgar, of Kingsmead-road, North Birkenhead, left by will £250 to the Birkenhead Borough Hospital; £100 each to the Children's Convalescent Home, West Kirby, the Liverpool Convalescent Institution, Woolton, and the Birkenhead and Wirral Children's Hospital, Woodchurch-road, Birkenhead.—The late Councillor David Morgan, of Glandyfi, Tredegar, Mon., has left the bulk of his property, valued at over £11,000, to the Tredegar Cottage Hospital, subject to the life interest of his wife.—Mrs. Jessie Marion Meade-King, of West Derby, Liverpool, left £32,450. On the death of her brother £5000 goes to the Royal Liverpool County Hospital for Children and £3000 to the Liverpool Queen Victoria District Nursing Association.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

### *Pharmacy Bill.*

ON Thursday, March 8th, Mr. O'Grady introduced a Bill into the House of Commons "to regularise the position of all persons trading as chemists and druggists or pharmacy store-proprietors in the sale of drugs, the dispensing of doctors' prescriptions, and the sale of patent medicines." The Bill, which was read a first time, proposes that after Jan. 1st, 1925, the Incorporated Society of the Institute of Chemistry shall alone possess the power to authorise any person to assume or use the title "chemist" and the Incorporated Society of the Institute of Chemistry shall conduct examinations for such purpose. Such examination and registration fees shall be payable as are fixed by the Council of the Institute of Chemistry. Clauses 3 and 4 define the powers of the Pharmacy Society to place persons on the pharmaceutical register and to conduct examinations. A central council is to be appointed under the Bill, consisting of 16 members, of whom 4 are to be appointed by the British Medical Association, 4 by the Incorporated Society of the Institute of Chemistry, 4 by the Pharmaceutical Society, and 4 by the Incorporated Society of Pharmacy and Drug Store-Proprietors of Great Britain, Ltd., together with a chairman appointed by and a member of the Privy Council.

Clause 8 provides: With regard to the sale of poisons in addition to any conditions now contained in any Act of Parliament the following provisions shall have effect:—

(*a*) So far as regards such poisons and poisonous preparations or compounds thereof as may be sold only on the production of a medical practitioner's prescription or order, a copy of such prescription or order must be duly entered by the registered pharmacist in a special book for the purpose, and the prescription must be duly signed with the name and address and academic qualifications of such medical practitioner and no such prescription or order shall be repeated without a further prescription or order being provided;

(*b*) As regards such poisons as may be supplied by a registered pharmacist without such prescription or order of a medical practitioner, the registered pharmacist shall only sell such poison with a printed label which shall have printed upon it the maximum pharmacopœia dose and the description of the antidote, if any, to such poison, together with the name and address of the seller of such poison;

(*c*) As regards such poisonous articles as are sold for domestic or commercial purposes, not being for human consumption, such poisonous articles shall be supplied only in distinctive bottles or containers with the words "poisonous, not to be taken" legibly inscribed upon a label thereon, together with the name and address of the seller.

Clause 9 deals with the powers of wholesale chemists to sell poisons, and provides that no person shall carry on business as a wholesale or manufacturing chemist who is not or does not employ at least one person on the pharmaceutical register. Under Clause 10 a system of licences is proposed for the sale of non-poisonous articles. Such licences are to be only for one year. The pharmaceutical register is to be under the control of the Central Council. Clause 12 provides that no advertisement in connexion with the sale of any medicinal article shall refer to the curative powers of such article with reference to more than three specific complaints which must be of a similar pathological character and no such advertisement shall be issued without the previous sanction of the Central Council. Any person infringing the provisions of the Act is to be liable on summary conviction to a fine not exceeding £5 for every such offence. The Act does not apply to Ireland.

## HOUSE OF COMMONS.

WEDNESDAY, MARCH 7TH.

### *Economy in National Insurance.*

Dr. WATTS asked the representative of the Ministry of Health the total number of insurance committees in England, the total number of members, and the total expense of the meetings, including railway fares, payments to members for loss of time and for subsistence; and whether, in the interests of economy, he was prepared to consider the advisability of reducing either the number of committees or the number of members of each committee.—Sir W. JOYNSON-HICKS replied: There are 128 insurance committees in England, with an aggregate membership of 3130. In 1922 the total expenditure on travelling was £2065, and the payment for subsistence and loss of remunerative time was £1658. The National Health Insurance Act, 1921, reduced the minimum membership from 40 to 20, and the maximum from 80 to 40, and the revised limits have not yet been in operation sufficiently long to indicate whether any further reduction in the size of these committees is practicable.

*Insanitary Slums in Poplar.*

Mr. LANSBURY asked the representative of the Ministry of Health if he was aware that a considerable amount of slum property in the borough of Poplar had been abandoned; that the local authority had no means of tracing the owners, consequently many people were living under insanitary conditions owing to the local authority being powerless to deal with the matter; and would he, when introducing the new Housing Bill, include such provisions as would enable local authorities to take over such properties without compensation, and either by restoration or rebuilding make them fit for human habitation.—Sir W. JOYNSON-HICKS replied: Local authorities already have wide powers under the Housing Acts of acquiring and reconstructing slum properties by means of schemes which as soon as approved by the Minister enable the procedure of the Lands Clauses Acts to be applied. These Acts contain special provisions for dealing with cases where owners of property cannot be found. The question whether further legislation is desirable will be considered in connexion with the new Housing Bill.

*Conscientious Objection to Vaccination.*

Mr. W. A. JENKINS asked the representative of the Ministry of Health whether, in view of the opinion of the medical profession in favour of vaccination, he would take steps to amend the Vaccination Act so that the power of parent or other person having the custody of a child to make a statutory declaration of conscientious objection to vaccination, as embodied in Section 1 of the Vaccination Act, 1907, should be abolished.—Sir W. JOYNSON-HICKS replied: It is not proposed to introduce legislation for the amendment of the Vaccination Acts during the present Session.

*Appointment of a Medical Officer of Health.*

Dr. WATTS asked the representative of the Ministry of Health if he intended to sanction the appointment of a medical officer of health which was made by the urban district council of Hindley on Jan. 15th last; if he was aware that, although there were at least 11 applicants holding the diploma of public health, the council selected an applicant who held no diploma nor had had the minimum of experience which was laid down in the Sanitary Officers' Order of 1922 to meet the case of a medical officer of health who, although not having a diploma, had had practical experience of the duties of a medical officer of health, and if he intended to sanction this appointment; and whether he would state his reasons for departing from the general rule laid down in the Sanitary Officers' Order, 1922.—Sir W. JOYNSON-HICKS replied: The Minister is aware of the facts stated in the question, and has intimated to the Hindley Urban District Council that he is not prepared to approve their selection of a candidate not possessing the required qualifications. The Council have been requested to consider the matter with a view to making a suitable appointment in accordance with the Sanitary Officers' Order, 1922.

*Widows and Fatherless Children.*

Mr. RHYS DAVIES asked the representative of the Ministry of Health the number of widows in England, Scotland, and Wales at the last census; and, if possible, the number of fatherless children and orphans under 14 years of age, respectively.—Sir WILLIAM JOYNSON-HICKS replied: Figures for England and Wales and Scotland are not yet available for the countries as a whole, but a statement will be sent to the hon. Member when the information is ready. The figures asked for in respect of London, Middlesex, and Herts, are given in the following table:—

| — | Widows. | Children under 14. | | |
|---|---|---|---|---|
| | | Father dead. | Mother dead. | Both parents dead. |
| London .. | 223,615 | 80,094 | 21,533 | 4,151 |
| Middlesex .. | 52,842 | 19,755 | 6,302 | 1,599 |
| Herts .. .. | 13,977 | 6,273 | 1,782 | 552 |

*A Vaccination Prosecution.*

Mr. LUNN asked the representative of the Ministry of Health whether he was aware that the local vaccination officer prosecuted Mr. F. Scholefield, 7, Buckley-road, Cemetery-road, Beeston, Leeds, for not having his child vaccinated: whether the local magistrates made an order on Feb. 15th directing the child to be vaccinated; whether he was aware that the child for which the order was made died on Feb. 24th, after suffering from convulsions through teething; and whether, in view of the danger of vaccination, he would instruct vaccination officers to refrain from prosecuting parents who through no fault of their own had omitted to make a declaration of objection under The Vaccination Act, 1907, within the required period.—Sir WILLIAM JOYNSON-HICKS replied: My right hon. friend is not empowered to interfere with the discretion of a vaccination officer in regard to prosecution. He is not aware whether in the case in question the child was unfit for vaccination at the time vaccination was due, but provision is made in the Vaccination Acts for postponement of vaccination in the case of any child who is not in a fit and proper state to be vaccinated. This child was not, in fact, vaccinated, and the certified cause of death was infantile eclampsia.

*Unfit Army Recruits in 1922.*

Mr. HANCOCK asked the Under-Secretary of State for War the number of recruits for His Majesty's forces who presented themselves for enrolment during the year 1922, but were rejected as physically unfit to serve, for each town with a population of 100,000 or more.—Lieut.-Col. GUINNESS replied: I regret that I am unable to give the information requested in a form distinguishing particular towns, but the numbers of recruits who presented themselves in each county recruiting zone in Great Britain for enlistment in the Regular Army during 1922 and the numbers rejected as physically and medically unfit to serve, were as follows:—

| Recruiting zone. | Male population. | Numbers presenting themselves for enlistment. | Numbers rejected by | |
|---|---|---|---|---|
| | | | Recruiting officers for physical reasons. | Medical officers. |
| West Surrey .. | 213,377 | 597 | 97 | 229 |
| East Kent .. .. | 215,751 | 1213 | 218 | 277 |
| Royal Fusiliers .. | 179,376 | 1263 | 487 | 441 |
| Norfolk .. .. | 239,646 | 948 | 89 | 395 |
| Suffolk .. .. .. | 292,790 | 673 | 59 | 155 |
| Bedfordshire, Hertfordshire, and Huntingdonshire | 280,761 | 587 | — | 224 |
| East Surrey .. | 538,182 | 1565 | 94 | 677 |
| Sussex .. ..... | 320,187 | 1542 | 785 | 246 |
| Essex .. .. .. | 344,967 | 979 | 38 | 467 |
| Northampton .. | 168,614 | 726 | 276 | 107 |
| West Kent .. .. | 289,998 | 1874 | 808 | 266 |
| Middlesex .. .. | 399,453 | 1080 | 81 | 400 |
| Northumberland .. | 368,040 | 2808 | 881 | 288 |
| Lincolnshire .. | 296,678 | 680 | 176 | 92 |
| West Riding (including Sheffield) | 1,569,117 | 5123 | 1439 | 1098 |
| East Riding .. | 223,426 | 560 | 59 | 52 |
| Leicestershire .. | 243,667 | 913 | 392 | 214 |
| North Riding .. | 222,862 | 663 | 110 | 124 |
| Staffordshire (including Wolverhampton) .. | 663,162 | 2810 | 1063 | 448 |
| Derbyshire .. .. | 353,029 | 860 | 211 | 104 |
| Nottingham .. | 307,655 | 1409 | 3 | 174 |
| Durham .. .. | 740,038 | 1835 | 1 | 600 |
| Lothians .. .. | 124,266 | 442 | 47 | 124 |
| Ayrshire .. .. | 145,274 | 337 | 70 | 95 |
| Scottish Border .. | 100,200 | 310 | 115 | 28 |
| Lanarkshire .. | 248,264 | 1295 | 592 | 424 |
| Black Watch .. | 317,135 | 1719 | 412 | 444 |
| Seaforth .. .. | 113,443 | 258 | 30 | 29 |
| Gordon .. .. | 196,872 | 787 | 191 | 229 |
| Cameron .. .. | 42,440 | 117 | 23 | 14 |
| Argyll .. .. .. | 365,401 | 1215 | 390 | 181 |
| Edinburgh .. .. | 182,417 | 1516 | 172 | 499 |
| Glasgow .. .. | 473,127 | 4343 | 1059 | 2224 |
| Warwickshire (including Birmingham) .. .. | 664,140 | 4833 | 848 | 2062 |
| Devonshire .. .. | 332,026 | 1547 | 562 | 487 |
| Somerset .. .. | 214,242 | 1014 | 146 | 269 |
| Gloucester .. .. | 353,106 | 3829 | 2155 | 750 |
| Worcester .. .. | 192,961 | 821 | 41 | 264 |
| Cornwall .. .. | 147,517 | 336 | 36 | 147 |
| Hampshire .. .. | 480,579 | 2595 | 741 | 637 |
| Dorset .. .. .. | 108,828 | 368 | 23 | 84 |
| Oxford and Bucks | 204,364 | 642 | 207 | 194 |
| Berkshire .. .. | 140,657 | 547 | 132 | 185 |
| Wiltshire .. .. | 144,951 | 626 | 236 | 184 |
| Lancaster .. .. | 102,318 | 408 | 53 | 106 |
| Liverpool .. .. | 549,725 | 3297 | 1222 | 715 |
| Bury .. .. .. | 140,408 | 827 | 53 | 329 |
| Cheshire .. .. | 475,935 | 1915 | 462 | 571 |
| North Wales .. | 257,974 | 644 | 131 | 344 |
| Welsh Border .. | 303,049 | 946 | 96 | 247 |
| East Lancashire .. | 263,294 | 1174 | 308 | 304 |
| Border .. .. .. | 162,908 | 520 | 225 | 71 |
| South Lancashire . | 164,286 | 676 | 154 | 241 |
| South Wales .. | 769,598 | 1939 | 736 | 216 |
| Preston .. .. | 310,206 | 1133 | 400 | 143 |
| Shropshire .. .. | 173,670 | 802 | 263 | 227 |
| Manchester .. .. | 840,518 | 2340 | 227 | 553 |
| London .. .. | 2,141,505 | 21,387 | 7765 | 6368 |
| Guernsey .. .. | 18,926 | 62 | 3 | 25 |
| Jersey .. .. .. | 22,338 | 64 | 18 | 18 |

*Economy in Public Health Services.*

Mr. ALFRED T. DAVIES asked the Chancellor of the Exchequer whether public relief is now being given by seven authorities—viz., employment exchanges for unemploy-

ment insurance, boards of guardians, local health authorities, insurance committees, local war pensions committees, local education authorities, and old age pension commitees; and whether the possibility of administering relief through one authority is, or has been, under consideration in view of the waste involved in the present complex system.—Mr. BALDWIN replied: If my honourable friend will give me a definition of public relief I will endeavour to answer him, but at present I cannot see why he includes war pensions and excludes civil service pensions, political pensions, and army and navy service pensions, and I am not clear whether he wishes to make a distinction between free health services rendered to individuals and free health services rendered to households, for example the removal of house refuse and sewage. I am also inclined to question the propriety of including normal benefits under State schemes of health and unemployment insurance in the category of public relief.

*Registrar-General's Annual Report.*

Lieut.-Colonel FREMANTLE asked the representative of the Ministry of Health if the Registrar-General's annual report for 1921, containing matter of first importance affecting the welfare of the people, would be presented to Parliament.—Sir W. JOYNSON-HICKS replied:-Under the general policy explained in the answer given to Commander Bellairs on May 16th, 1922, this publication, along with others, is now issued as a Stationery Office publication instead of a Command Paper, but this will not interfere with its presentation to Parliament, which is being arranged forthwith.

THURSDAY, MARCH 8TH.

*Unemployment and the National Health.*

The House went into Committee of Supply on the Civil Service Estimates, Mr. J. F. HOPE in the chair.

On a Vote on Account of £126,600,000 for Civil Service and Revenue Departments, Mr. WALSH moved to reduce the vote by £100 on the ground of the inadequacy of the grants given by the Unemployment Grants Committee in aid of relief works started by local authorities.

After some discussion, Mr. NEVILLE CHAMBERLAIN, the newly-appointed Minister of Health, who was greeted with general cheers on rising, said he made his grateful acknowledgements to the hon. Members who had made such kindly references to him in the debate. The interest of the Ministry of Health in the subject of unemployment was only second to that of the Ministry of Labour. It was not merely that the prevalence of unemployment meant the infliction of great burdens and liabilities on the boards of guardians and the raising of the rates of local authorities with which the Ministry had to deal, but it affected also the health of the people. The vital statistics of the last few years were a wonderful tribute to the work of the Ministry of Health and the medical officers throughout the country. One would have supposed that the results of unemployment would have been reflected in a great increase in the mortality rate, and especially in the infantile mortality rate; but instead of that they had seen all records broken in the opposite direction. But it would be a mistake to suppose that unemployment did not affect the national health, and in particular the physique of the children. No one who watched the children during the war, when the working classes were earning high wages, could fail to observe the enormous improvement in their appearance. The remarkable figures to which he had alluded might have some foundation in the exceptionally good nourishment which the children were able to obtain during that time. It would be his endeavour, in conjunction with the Minister of Labour, to do all they could to help forward schemes to relieve unemployment. They had, however, to feel their way and proceed from experiment to experiment if they were not to make mistakes which might be disastrous to the finance of the country as a whole. They hoped gradually to build up a system which, though it might never be adequate to cover the whole field, would, as it went on, deal with a gradually increasing proportion of those who were now unemployed and a burden on the rates.

The motion to reduce the vote was rejected by 275 votes to 165, and the vote was agreed to.

*Non-Service Doctors on Medical Boards.*

Mr. NEIL MACLEAN asked the Minister of Pensions the number of doctors acting on the pensions medical boards who had had no service during the war.—Major TRYON replied: Of some 6000 medical men employed by my department on boarding duties, only 299 (or 5 per cent.) have had no war service. Moreover, the large majority of these are specialists for whom no efficient ex-service substitutes can be obtained.

*Fatal Accidents in Mines.*

Mr. TOM SMITH asked the Secretary for Mines if he would state the total number of persons killed in the mining industry for the 10 years ending 1921; and the total amount of money paid by way of compensation, &c., to their dependents.—Lieut.-Colonel LANE-FOX replied: The total number of persons killed in the mining industry in the United Kingdom during the 10 years ended 1921 was 12,897. Particulars of payments under the Workmen's Compensation Act, 1906, for the years 1915 to 1918 were not collected. In the six remaining years of the period there were 7638 fatal accident cases reported, the total compensation for which amounted to £1,476,062.

FRIDAY, MARCH 9TH.

*Sale of Intoxicants to Children.*

Viscountess ASTOR, in moving the second reading of the Intoxicating Liquor (Sale to Persons under Eighteen) Bill, said the measure, which was introduced two years ago by the late Lord Bryce, had behind it the teachers and the chief medical authorities in the country. A letter in favour of it appeared in the *Times*, signed by some of the chief figures in the medical profession, and it had the support of *The Lancet* and the *British Medical Journal*. She had personally received 700 letters from medical women approving of it. The Bill proposed to make it illegal to sell to anyone apparently under 18 any kind of intoxicants for consumption in a public-house. It did not touch clubs, because this was not a club problem. The point of the Bill was to help self-control and the powers of resistance. The Bill was just as important for girls as it was for boys. In an official answer given the other day it was stated that in 1919 2610 boys and girls between 16 and 21 were arrested for drunkenness; in 1920 the number was 4063, and in 1921 2172. The chief medical authorities were all at one as to the danger of alcohol in adolescence.

Mr. C. W. CROOK, in seconding, said he disliked as much the continued cant of the extremist on one side as he did the continual decant of the extremist on the other. He supported the Bill because alcohol was harmful physiologically and psychologically to the boy and girl.

Mr. GREAVES-LORD, who moved the rejection of the Bill, said if it were confined to spirits there might be some degree of unanimity which would render its passage absolutely secure. The real purpose of the Bill—not necessarily the purpose of Lady Astor—was the extension of prohibition into the law of this country.

After considerable discussion, Mr. BRIDGEMAN (Home Secretary) said that as far as the matter affected the Home Office there seemed to be very considerable difficulty in changing the age from 16 to 18. It was far more difficult to distinguish between two boys just under and just over 18 than between boys just under and just over 16. Proceeding to express his personal view, Mr. Bridgeman said that in 1914, out of a total number of convictions for drunkenness of 48,000, there were 2600 people convicted under 21, and probably a much smaller number under 18. In 1920 the numbers rose to 78,000 and 4065. In 1921 they were 64,000 and 2174. That did not show that the young people were growing more intemperate, and it was only fair on their behalf to say that there was no proof that it was a growing evil. If a public-house was properly conducted he should not in the least mind his own boys going in and drinking a glass of beer. Where reform was needed was in the character and atmosphere of the public-house. There was no case to show that beer was bad or unwholesome. If the Bill were confined to spirits, or were restricted to girls, he would take a very different view. How could character be formed unless young people were allowed to meet and overcome these temptations?

On a division the motion for the rejection of the Bill was negatived by 338 votes to 56, and the Bill was read a second time.

*Coroner and Death Certificates.*

Dr. CHAPPLE asked the Secretary of State for the Home Department whether his attention had been called to the pronouncement of the City coroner that doctors should not sign a death certificate if they had only seen the patient for the first time two hours before death; whether instructions to this effect had been issued by his department; and whether, in view of the fact that such a policy would greatly increase the number of inquests involving post-mortem examinations without adequate justification, he could state the average cost of such inquests.—Mr. N. CHAMBERLAIN (Minister of Health) replied: The answer to the first part of the question is in the affirmative. With regard to the second part, no such instructions have been issued by my department or by the Home Office. With regard to the third part I have no information, but will make inquiries and communicate with the hon. gentleman.

*Education of Mentally Defective Children.*

Mr. ROBERT MORRISON asked the President of the Board of Education how many mentally defective children from London County Council special schools had been returned to elementary schools during the past 12 months; and whether they had been sent to special schools by mistake, or for what reason had they now been returned to elementary

schools.—Mr. E. WOOD replied: I am informed that out of about 7000 mentally defective children on the books of special schools in the area of the local education authority for London, 66 were returned to public elementary schools in 1922. It is the practice of all the persons concerned to keep a careful watch over the progress of children in special schools for mentally defective children and to restore to the ordinary public elementary school every child to whom it would be beneficial to pursue his education in normal surroundings. Such restoration does not warrant any inference that an initial mistake was made.

*Pension Appeals.*

Mr. STEPHEN asked the Minister of Pensions the number of appeals which had been heard by the appeals tribunal until Jan. 31st, 1923; and the number of those in which the applicant had had his appeal sustained.—Major TRYON replied: About 99,000 appeals on entitlement have been heard by the Pensions Appeal Tribunal, of which some 27,000 have been decided in favour of the appellant.

Sir EDWIN STOCKTON asked the Minister of Pensions whether he would give the number of cases in which an appellant, having won his appeal to the House of Lords Tribunal, had had the result of such decision negatived by the decision of the medical board to which his case was then referred.—Major TRYON replied: There are no such cases.

MONDAY, MARCH 12TH.

*Exhibition of Indecent Films in London.*

Mr. NEWBOLD asked the Secretary of State for the Home Department whether his attention had been called to the exhibition of indecent films in London; and would he explain why effective steps had not been taken to prevent such displays.—Mr. BRIDGEMAN replied: I have seen certain articles in a weekly newspaper to which the hon. Member presumably refers. It is stated in these articles that full particulars have been sent to Scotland Yard, but the Commissioner of Police informs me that no information could be obtained from the newspaper in question which was of the slightest value in leading to the detection of any exhibition of indecent films. The police are fully aware of the danger of such films being exhibited, and will do all they can to provide against it.

*Lunacy Act Regulations.*

Mr. THOMAS GRIFFITHS asked the Minister of Health whether, in view of the fact that Section 79 of the Lunacy Act conferred upon friends as well as relatives the right to apply to the visiting committee for the discharge of a patient on accepting responsibility in regard to him, and seeing that the plan followed by the asylum authorities of communicating this right by circular to one relative only had the effect of discarding that part of the section which referred to friends, he would take steps to secure that the recommendation of the departmental committee be forthwith carried out and Section 79 be posted up in the waiting rooms of public asylums in order that the rights guaranteed by statute may no longer be intentionally concealed from friends.—Mr. N. CHAMBERLAIN replied: In the opinion of the Board of Control there are serious objections to the general rule requiring that this section should be posted up in waiting rooms. If any friends apply to a mental hospital for a copy of the regulations the Board have no doubt that their request would be complied with. The Board are considering the revision of their rules, and it is proposed to require that copies of regulations as to visitation, which will include the substance of Section 79, shall be sent to all persons mentioned as relatives or friends of the patient in the statement of particulars accompanying the reception order.

*The Price of Milk.*

Sir JOHN LEIGH asked the Minister of Agriculture whether Lord Linlithgow's Committee would issue an interim report on the price of milk to the consumer; and, if so, when the report might be expected.—Sir R. SANDERS replied: I understand from the noble marquess, the chairman of the committee to which my hon. friend refers, that a draft report regarding the methods, the costs of selling, and distributing milk is in course of preparation, and that as soon as certain outstanding information has been received it will be completed for presentation.

*Meat Inspection.*

Mr. TILLETT asked the Minister of Health whether he could inform the House at what date would be issued the proposals to give effect to the recommendations of the departmental committee on meat inspection.—Mr. N. CHAMBERLAIN replied: Effect has already been given to the recommendations of the departmental committee which deal with the question of uniformity in meat inspection by the issue of a circular and memorandum to local authorities in March, 1922. I will send the hon. Member a copy of these documents. Regulations have been drafted to give effect to the committee's recommendations in regard to the marking of meat and these are under discussion with the parties interested. Regulations are also being prepared dealing with the transport and handling of meat, but I am not yet able to say on what date these regulations will be issued.

*Medical Officers of Ministry of Health.*

Mr. SHORT asked the Minister of Health the number of medical officers now employed in his department and the salaries paid; and what was the number so employed, and salaries paid, in 1921.—Mr. N. CHAMBERLAIN replied: The number of medical officers now employed by the Ministry of Health is 56, and their salaries, including bonus, amount to £62,504. In addition there are 35 regional medical officers employed, whose salaries amount to £46,125, which sum is now recovered from the approved societies. In March, 1921, the medical staff of the Ministry, including the regional medical staff, was 101, whose salaries, including bonus, amounted to £130,630, the whole payable from executive funds.

# Medical Diary.

*Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.*

## SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY, March 22nd.—4.30 P.M., *Papers to be read*:—G. Hewett: The Dusuns of British North Borneo. (Communicated by W. B. Hardy, Sec. R.S.) L. T. Hogben and F. R. Winton: The Pigmentary Effector System. III. Colour Response in the Hypophysectomised Frog. (Communicated by Prof. E. W. MacBride.) H. R. Hewer: Studies on Amphibian Colour Change. (Communicated by Prof. E. W. MacBride.) J. Walton: On Rhexoxylon, Bancroft. A Triassic Genus of Plants Exhibiting a Liane-type of Vascular Organisation. (Communicated by Prof. A. C. Seward.)

*Papers to be read in title only*:—Margaret Tribe: The Development of the Hepatic Venous System and the Postcaval Vein in the Marsupialia. (Communicated by Prof. J. P. Hill.) J. Gray: The Mechanism of Ciliary Movement. III. The Effect of Temperature. (Communicated by Prof. J. S. Gardiner.) E. Ponder: The Inhibitory Effect of Blood Serum on Haemolysis. (Communicated by Sir E. Sharpey Schafer.)

**ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.**

*MEETINGS OF SECTIONS.*

**Tuesday, March 20th.**

GENERAL MEETING OF FELLOWS: at 5 P.M. Ballot for election to the Fellowship.

PATHOLOGY: at 8.30 P.M.

*Annual General Meeting:*
Election of Officers and Council for 1923–24.

*Papers:*
Dr. S. C. Dyke: Preliminary Communication on Some Tumours Containing Anisotropic Fatty Bodies.
Mr. A. G. Timbrell Fisher: The Nature of Osteo-Arthritis as Revealed by an Investigation into the Earlier Pathological Changes.

*Demonstration:*
Dr. E. H. Kettle: Lipoid Degeneration of the Kidney.

**Wednesday, March 21st.**

HISTORY OF MEDICINE: at 5 P.M.

*Papers:*
Mr. R. R. Steele: Chemical Knowledge of the Thirteenth Century.
Mrs. Singer: Some Quips and Cranks of a Mediæval Alchemist.

*Social Evening.*

The last Social Evening of the Session will be held on Wednesday, March 21st, at 8.30 P.M.
Fellows, Members of Sections, Associates, and their friends will be received by the President, Sir William Hale-White, and Lady Hale-White, at 8.30 P.M.
Dr. H. C. Cameron will deliver a short (illustrated) Address at 9 P.M. on the Mystery of Lord Byron's Lameness.
The Library will be open and various objects of interest will be exhibited. Music, light refreshments, and smoking.

LIBRARY: On this evening the principal Reading Room will be closed at 5 P.M., but readers will be accommodated in other rooms.

**Thursday, March 22nd.**

UROLOGY: at 8.30 P.M.

*Paper:*
Mr. Swift Joly: Diverticulum of the Bladder with Special Reference to Operative Treatment.

**Friday, March 23rd.**

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)

*Cases:* The following will be shown by:—
Dr. Parkes Weber: A Case of Raynaud's Syndrome.
Dr. G. M. Kendall: A Case of Patent Ductus Arteriosus.
Dr. Cautley: A Case of Rickets.
Dr. R. C. Jewesbury and Mr. C. Max Page: Two Cases of Duodenal Obstruction in Infants.

Dr. Mandel: A Case of Tay-Sachs's Disease.
Dr. C. Worster-Drought: A Case of Enlarged Liver with Persistent Acetonuria.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
*Paper:*
Mr. N. Bishop Harman: Surface Diseases of the Eye in their Epidemiological Aspects.

MEDICO-LEGAL SOCIETY, 11 Chandos-street, Cavendish-square, W.
TUESDAY, March 20th.—8.30 P.M., Dr. H. A. Burridge: State Effort to Rescue Drug Victims, with Special Reference to the Dangerous Drugs Act. (To be followed by a discussion.)

ROYAL SOCIETY OF ARTS, John-street, Adelphi, London, W.C. 2.
WEDNESDAY, March 21st.—8 P.M., Dr. F. W. Edridge-Green: Some Curious Phenomena of Vision and their Practical Importance. The paper will be illustrated with lantern and other demonstrations. Prof. E. H. Starling will preside.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
TUESDAY, March 20th.—5 P.M., Second Lumleian Lecture:—Dr. A. J. Hall: Encephalitis Lethargica (Epidemic Encephalitis).
THURSDAY.—5 P.M., Third Lumleian Lecture.

FELLOWSHIP OF MEDICINE, POST-GRADUATE LECTURES, 1, Wimpole-street, W.
THURSDAY, March 22nd.—5.30 P.M., Dr. H. W. Barber: The Investigation of Certain Diseases of the Skin in the Light of Recent Research.

WEST END HOSPITAL FOR NERVOUS DISEASES.
The following Clinical Demonstrations will be held during the forthcoming week in the Out-patient Department of the Hospital, 73, Welbeck-street, W. The Demonstrations are open to Practitioners and Medical Students without fee.
THURSDAY, March 22nd.—1.30 P.M., Dr. Hildred Carlill: Practical Points in Everyday Neurology.
FRIDAY, March 23rd.—1.30 P.M., Sir James Dundas Grant: Nerve Deafness.
C. WORSTER-DROUGHT, M.D., Dean.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, March 19th.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.
TUESDAY.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—11 A.M., Mr. Simson: Gynæcological Demonstration. 12 noon, Dr. Burnford: Pathological Demonstration. 3 P.M., Dr. Pernet: Skin Department.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department.
FRIDAY.—12 noon, Dr. Flett: Radiology. 2 P.M., Mr. Banks Davis: Diseases of Nose, Throat, and Ear. 3 P.M., Mr. Sinclair: Surgical Cases.
SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10.30 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Depts.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, March 21st.—4.30 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: JAN.–MARCH, 1923.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, March 19th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Involuntary Laughing and Crying: Dr. Kinnier Wilson.
TUESDAY, March 20th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Subacute Combined Degeneration of Spinal Cord: Dr. Hinds Howell.
THURSDAY, March 22nd.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Demonstration in Exercise Room on Methods of Re-education of Movements.
FRIDAY, March 23rd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Demonstration in Exercise Room on Methods of Re-education of Movements.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
NEURO-PATHOLOGY.
MONDAY, March 19th.—12 noon, Tumours of the Nervous System: Dr. J. Godwin Greenfield.
Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.
C. M. HINDS HOWELL, Dean of Medical School.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, Marylebone, W. 1.
THURSDAY, March 22nd.—Dr. J. Strickland Goodall: The Toxic Heart.

LONDON HOSPITAL MEDICAL COLLEGE, Turner-street, Mile End, E. (Anatomical Theatre).
MONDAY, March 19th (and the two following days).—4 P.M., Dr. Otto F. F. Leyton: Diabetes Mellitus.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street.
THURSDAY, March 22nd.—4 P.M., Dr. Thompson: Choreas.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.
THURSDAY, March 22nd.—5 P.M., Dr. J. B. Banister: Obstetric Emergencies.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSES.
TUESDAY, March 20th.—4.15, Mr. J. P. Buckley: Intussusception.
FRIDAY.—Mr. W. R. Douglas and Dr. J. M. W. Morison: The Diagnosis and Surgical Treatment of Lesions of the Large Intestine.

SALFORD ROYAL HOSPITAL POST-GRADUATE LECTURE.
THURSDAY, March 22nd.—4.30 P.M., Mr. Jefferson: Some Points in the Surgery of the Spine. *Unavoidably postponed.*

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, March 21st.—4 P.M., Dr. W. J. O'Donovan: The Industrial Menace of Syphilis.

# Appointments.

ALLAN, G. G., M.B., Ch.B. Edin., D.P.H. Edin., has been appointed Clinical Pathologist to the Crichton Royal, Dumfries.

MARTIN, A. A., M.D. Lond., one of the Medical Referees under the Workmen's Compensation Act for County Court Circuit 50, Eastbourne, &c.

MURDOCH, GEORGINA, M.B., Ch.B. Glasg., Assistant School Medical Officer at Wigan.

WALKER, G. C., M.D., Ch.B. Manch., Medical Officer of Health for Lythom, St. Anne's.

Surgeons under the Factory and Workshop Acts: CLARK, W. H., M.D. Aberd. (Bucksburn, Aberdeen); STEELE-PERKINS, D. S., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. (Honiton).

# Vacancies.

*For further information refer to the advertisement columns.*

*Bedford County Hospital.*—H.S. and Asst. H.S. £175 and £130 respectively.

*Birmingham and Midland Homœopathic Hospital and Dispensary.*—Res. H.S. £175.

*Birmingham and Midland Hospital for Skin, &c., Diseases.*—Asst. Radiologist.

*Birmingham Orthopædic Centre.*—Jun. M.O. £350.

*Blackwell and Skegby Rural District Councils and the Derbyshire County Council.*—M.O.H. £800.

*Bristol Royal Hospital for Sick Children and Women.*—Hon. S. to Out-patients.

*Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.* H.S. £100. Jun. H.S. £50. X ray O. and Asst. S.

*Chester Royal Infirmary.*—Asst. H.S. £150.

*Coventry and Warwickshire Hospital.*—Res. H.P. £200.

*Croydon General Hospital.*—Jun. H.S. £150.

*East London Hospital for Children and Dispensary for Women, Shadwell, E.*—Anæsthetist. £50.

*Elizabeth Garrett Anderson Hospital, Euston-road.*—Asst. M.O. to V.D. Dept. £1 1s. per attendance. Also Asst. P. to Out-patients.

*Evelina Hospital for Children, Southwark, S.E.*—Hon. P. Hon. Dental S.

*Gloucestershire Royal Infirmary and Eye Institution.*—Surg.

*Halifax Royal Infirmary.*—Third H.S. £150.

*Hospital for Sick Children, Great Ormond-street, W.C.*—H.P. £50. Also Surg. Registrar. £300.

*Lagos Town Council, Africa.*—Asst. M.O.H. £750.

*Leicester, North Evington Poor-law Infirmary.*—Res. M.O. £300.

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MEREDYTH JONES.—On March 2nd, 1923, at Croydon, to Muriel, the wife of C. Meredyth Jones, F.R.C.S.—a daughter.
PETTY.—On March 7th, at St. Mary Bourne, near Andover, Hants, the wife of Dr. David Petty, of a son.
RICHARDSON.—On March 10th, at Belgrave-road, S.W., the wife of Captain D. T. Richardson, M.C., R.A.M.C., of a son.
ROBERTS.—On March 10th, at Oak-road, Woolston, Southampton, the wife of Dr. P. M. Roberts, of a son.
WEBSTER.—On Feb. 24th, at Holcombe, near Bath, the wife of Francis Webster, L.R.C.P. & S.I., of a son.

## DEATHS.

DALTON.—On March 9th, at Fellows-road, Hampstead, Norman Dalton, M.D., F.R.C.P., late Senior Physician to King's College Hospital, aged 65.
MEREDYTH JONES.—On March 9th, 1923, at Croydon, Muriel, the wife of C. Meredyth Jones, aged 27 years.

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# Notes, Comments, and Abstracts.

## THE USE OF SALINE SOLUTIONS INTRAVENOUSLY.*


BY SIR W. M. BAYLISS, F.R.S.,
PROFESSOR OF GENERAL PHYSIOLOGY, UNIVERSITY COLLEGE, LONDON.


As is indicated by the title of my remarks, they will be limited to the discussion of artificial solutions. It will, however, be necessary to refer incidentally to some properties in which they are comparable with blood as used for transfusion. We have first to remember that such artificial solutions merely increase the volume of the blood in circulation without adding to its important constituents. We may ask: What, then, is their value?

To begin with the foundations of the problem. It is scarcely necessary to point out that the tissues need a continual supply of certain things which we call, in general terms, "foods," of which the most vital is oxygen. This is carried by the red blood corpuscles, and must be afforded at a certain minimal rate if the cells are to be preserved from the effects of want of oxygen. Thus, if the blood is diluted, it must be sent at a faster rate to make up for the lower concentration in corpuscles. Now when the total volume of the blood is deficient the blood pressure is low because the heart does not receive enough by the veins to send on. Hence the tissues actually do suffer from want of oxygen, although the blood may be of normal constitution. Looked at in another way—at the moment of systole the ventricles contain a certain fraction of the whole blood: hence, if this is smaller than the normal amount, the ventricles can only propel in unit time less than they should do. The amount flowing through any particular vascular region is therefore diminished.

When the volume of the blood is brought up to its normal value by the addition of an indifferent fluid a much larger volume circulates. Although this diluted blood does not contain so large a percentage of corpuscles as that which was circulating very slowly before the injection, it has been found by experiment that the greater rate of supply much more than compensates for the dilution. In other words, the number of corpuscles passing a particular cell in unit time is greatly increased and the supply of oxygen becomes sufficient. This is briefly the justification for the use of intravenous injections. The incidental rise of blood pressure is of subsidiary importance. Such a rise can be effected by adrenalin, but only at the cost of restricting the supply of blood to the larger number of organs.

An interesting question arises as to how far the decrease of corpuscles can be effectively replaced in the way described. From experiments on animals it appears that the number of corpuscles in the body may be reduced by hæmorrhage to one-third or less. This would mean an enormous loss of blood in man.

### *The Nature of the Solution Used.*

We may consider the nature of the solution to be used. In theory, of course, blood itself seems the obvious thing to replace blood which has been lost, except perhaps in traumatic shock without loss of blood, where the corpuscles are merely stationary in the capillaries until carried again into the effective blood-stream. But in any case, blood is not always available at a moment's notice, and there are cases where prompt action is of vital importance. Physiological saline (0·9 per cent. sodium chloride in water) was naturally the first solution to be tried. It was known to be innocuous, and had been found effective for isolated organs and for the preservation of blood corpuscles. But it was found useless for replacing lost blood in the whole organism. Measurements showed that it had disappeared from the circulation in 20 to 30 minutes or less. Why is this the case? Here we cannot avoid referring to the difficult question of *osmotic pressure*. With regard to the explanation of the way in which osmotic pressure is produced even experts are not agreed. Thus we must be content with a brief consideration of the facts. Suppose that we have a bag of a material, such as parchment paper or collodion, which is pervious to water, but whose pores, although large enough to allow salts and sugar to pass through, are too small for the large particles of colloids, such as the proteins of the blood. Let us fill this sac with blood and immerse it in water. The salts soon pass through and becoming practically equal on both sides may be neglected for our present purpose. But the colloids remain inside. This difference between inside and outside causes in some way the attraction of water to the interior. The force of this

* Lecture given at the Children's Clinic, Marylebone-road, London, on March 6th, 1923.

attraction is proportional to the concentration of the colloids and in normal blood is of the value of 35 to 40 mm. of mercury pressure. This is known as the osmotic pressure of the blood colloids. If we put pressure on the contents of the sac so as to try to force water out of the sac by filtration, none will escape until the pressure applied exceeds the opposing osmotic pressure of the contents of the sac.

The walls of the blood-vessels, in so far as we are concerned with their permeability, have properties like those of parchment paper and normally do not allow passage to colloids. Hence the conditions are present for these colloids to exert their osmotic properties of attracting water with a certain force. But in the arteries and the first part of the capillaries the blood pressure is higher than this. There is accordingly filtration of fluid (= lymph). As we proceed towards the veins, the blood pressure diminishes and reaches a value below that of the osmotic pressure of the blood colloids. Reabsorption begins here and most of the previous filtrate is taken back again. What remains is carried to the thoracic duct by the lymphatic vessels.

We have seen that the value of the osmotic force is proportional to the concentration of the colloids in the blood. Hence, if we dilute the blood by the addition of a solution which contains no colloids, we reduce the force opposing filtration and the blood has also to travel further along the capillaries before the blood pressure is reduced sufficiently to allow reabsorption. Both causes combine to produce an excessive filtration, which will continue until the blood returns to its normal osmotic pressure—that is, until the liquid injected has disappeared.

The obvious conclusion is that some colloid with an osmotic pressure equal to that of the blood colloids must be added to our injection solution. What are the colloids which it is possible to use? Serum proteins from foreign sources cause hæmolysis and anaphylaxis. Gelatin serves well, but is liable to contain tetanus spores and may cause trouble by setting to jelly in the tubes of the apparatus. On the other hand, gum arabic or acacia answers all requirements. It is quite innocuous and in a concentration of 6·5 to 7 per cent. in 0·9 per cent. sodium chloride has an osmotic pressure equal to that of the colloids of the blood. Its viscosity also is practically identical with that of the blood, although this is not of great importance. The salt is necessary because the blood corpuscles and tissue cells are impermeable to salts, hence their osmotic pressure must be balanced. Such solutions have in practice been found to cause a permanent increase in the volume of the blood. An essential point is that the gum must be good, in clear nearly colourless lumps, such as is sold as "Turkey elect." Powdered samples seem to be adulterated. At the instance of the Medical Research Council, Messrs. Evans, Lescher, and Webb supply a sterilised solution ready for use. Messrs. Martindale prepare a concentrated solution for dilution as required. It is to be noted that the heating in an autoclave reduces the viscosity somewhat. Thus the rise of blood pressure produced by a given volume is not so great as with the full viscosity. But this may be an advantage, since it reduces the work of the heart.

*The Indications for Intravenous Injection.*

Passing on to the conditions in which intravenous injection may be of value, we may call to mind the several ways in which the volume of the blood in actual circulation may be reduced. By actual hæmorrhage from wounds or post-partum; by great loss of water from the intestine, as in cholera, infantile diarrhœa, &c.; by dilatation of the capillaries and stasis therein, as in traumatic shock. In operations, hæmorrhage and shock may combine and gum saline should always be ready for use. It has been found of much value in this way at the Women's Hospital in New York. It is rather remarkable that it has the property of restoring the renal function in blackwater fever, probably by raising the blood pressure. After hæmorrhage the rate of formation of new blood corpuscles is hastened. It is likely that this depends on a due supply of blood to the bone marrow.

Certain objections have been made to gum saline. It is sometimes ineffective, as in severe traumatic shock. In this state the capillaries have become permeable even to the colloids of the blood and transfusion of blood itself is useless, as was found in the casualty clearing stations in the war. Experiments on animals suggest, however, that repeated small doses may restore otherwise hopeless cases. When no blood has been lost, and the reduced volume is due to stasis in the capillaries, it would seem reasonable that a further supply of corpuscles is not needed, provided that those in a stationary condition can be washed into the circulation. So-called "chills" have been met with, but not more frequently than with blood or simple saline. Agglutination of corpuscles occurs in the cat, but does not appear to be present in man. It is harmless, even in the cat—a deposit of agglutinated corpuscles can be injected and is at once resuspended. There is no hæmolysis.

Misstatements are often made. Prejudice attributes anything that happens after a gum infusion to its use. A case came under my notice in which it was stated that capillary embolism had been produced by gum. On looking up the notes of the autopsy, it was found that there was nothing of the kind, and indeed nothing pathological that could be attributed to the gum. The possibility of unpleasant feelings during recovery of the nerve centres from their anæmia is not to be overlooked. The indication is to inject slowly.

In conclusion, an interesting physiological state may be referred to in which neither blood nor gum saline causes more than a brief rise in blood pressure. This is the low blood pressure resulting from section of the spinal cord just below the bulb. No explanation has been found for the fact.

## PUBLIC HEALTH IN CALCUTTA.*

THE total population of the city of Calcutta was found to be 896,067 at the census of 1911, males numbering 607,671 and females 288,393; and on these figures the statistics are calculated for 1920. Hindus numbered 606,382 and Mohammedans 241,587, and of the remainder 27,659 were non-Asiatics and Anglo-Indians. The general death-rate was 39·3 per 1000 in 1920, being a slight improvement on that of the previous year (42·2), but considerably above that of the preceding quinquennium (30·8); for the three years 1918–20, the average was 38·8, as compared with 25·6 for the previous three years—that is, since influenza swept through the city in 1918 the ratio has risen by 50 per cent.; Bombay and Madras, however, had higher ratios (46·80 and 41·30 respectively). The medical officer of health, Dr. H. M. Crake, considers that the high ratio, especially from "all other causes," appears to be indirectly due to the repeated epidemics of influenza, and the resultant lowering of vitality and diminution in the power of resisting disease. "All classes of the community, whether living in the slums which, in Lord Curzon's famous phrase, 'skulk behind a fringe of palaces,' or in the 'palaces' of the first-class residential areas, suffered to a greater or less extent." Every ward in the city returned deaths greatly above the average. In the various wards the mortality ranged from 15·4 per 1000 in Park-street, 18·2 in Bamun Bustee, and 20 in Waterloo-street, to 54·3 in Entally and 76·8 in Kidderpore. The death-rate among males was 33·8, while among females it was 50·9. Hindus had a mortality of 41·4, Mohammedans 37·1, and "non-Asiatics and Anglo-Indians" 26·2 per 1000. Dr. Crake draws attention to the high female mortality between 15 and 40 years of age, as compared with that of males in the corresponding periods; the ratios for the year were, for males, 15·0, 17·6, and 22·4 per 1000 for ages 15–20, 20–30, and 30–40; while for females the corresponding ratios were 27·9, 28·9, and 30·8. The chief diseases causing this excess female mortality were tuberculosis (3·6 per 1000), respiratory diseases (11·4), dysentery and diarrhœa (4·8), and malaria (2·0); the corresponding male mortality ratios being 1·7, 7·9, 2·8, and 1·2. This heavy incidence of tuberculosis among females is intimately associated with the *purdah* system: "in order to secure privacy the zenana is inevitably the darkest and worst ventilated portion of the house, as it must be screened from observation on all sides."

The infantile mortality (386·0 per 1000 births) was higher than in the previous year (357·8), and much in excess of the years immediately preceding, 249·1, 239·2, and 280·5 in 1916–17–18; it was higher than in any year since 1902; but Dr. Crake considers that this increase is largely due to defective birth registration in the last two years; in Fenwick Bazar Ward (No. 13) the birth-rate declined from 6·8 in 1919 to 5·2 in 1920, the infantile mortality ratio rising from 450 to 786 per 1000 births; in Bow Bazar Ward (No. 10) the birth-rate fell from 12·7 to 8·1, while the mortality rose from 438 to 637 per 1000 births; in Collinga Ward (No. 15), where the birth-rate fell from 13·6 to 10·1, the mortality rose from 380 to 617 per 1000 births. "It is all very baffling, and it seems to be of very little use trying to make any general deductions from these data." But it is clear that it is the urban wards that have the highest ratios; "babies have a very poor chance of surviving in the slums of Bara Bazar." Of the total 5935 infantile deaths, 1798 (30 per cent.) occurred during the first week of existence; the chief causes were debility at birth (854), premature birth (508), and tetanus neonatorum (335). From one week to one month there were 900 deaths (15 per cent. of total), of which 436 were from tetanus. This is due to "dirty midwifery," and is absolutely unknown among cases attended by the municipal midwives. Among Mohammedans the infantile mortality was 449, and among Hindus 381 per 1000, the ratio for non-Asiatics and Anglo-Indians being 227, and the same for native Christians. The high rate for Mohammedans is due to the *purdah* system and to the neglect of medical attendance; it is surprising

* Calcutta: Corporation Press, October, 1921.

to find the same ratio applicable to both Anglo-Indians and native Christians, especially as the general mortality ratios were 26·2 and 34·8 respectively.

*Causes of Death.*

Only 53 deaths were recorded from *plague* during 1920, giving a ratio of 0·05 per 1000, as compared with 0·37 in 1919; of the 57 cases, 53 were fatal, all except three occurring among Hindus; it is noted, however, that not a single death was returned among Mohammedan females, which suggests concealment of cases; 54 out of the 57 were of the bubonic type. *Cholera* caused 2302 deaths (2·6 per 1000, as compared with 4·1 in 1919); it began later than usual, reached its maximum in June, when there were 386 deaths, declined to 50 deaths in September, but rose again to 210 in November. The wards most affected were Coomartoli (3·8 deaths per 1000), Kidderpore (3·6), Watgunge and Garden Reach (3·6), and Jorabagan (3·4), all of these being riparian sections, either on the Hooghly, or Tolly's nullah, or near the docks. "The use of unfiltered water for domestic purposes, particularly during the hot weather, when the supply of filtered water (largely owing to the appalling amount that is wasted) is insufficient, is responsible for many cases of cholera. This appears to explain the high rate of mortality in Kidderpore, a great deal of which occurred amongst the large cooly population." Contamination of food by dust and flies is another important source of infection, as there are still thousands of service privies remaining in the city. Among Hindus the death ratio was 3·3 per 1000, for Mohammedans 1·1, for Indian Christians 1·2, and among non-Asiatics and Europeans only 0·36.

Small-pox, which had caused 1870 deaths (2·1 per 1000) in 1919, became truly epidemic in 1920, when the deaths numbered 2925 (3·3 per 1000), this ratio being higher than in any year of the present century except 1906 (3·4) and 1909 (4·4); the wards that suffered most were Entally (6·2) and Mocheepara (5·6). For Hindus the death-rate was 3·6, and for Mohammedans 2·7; while among non-Asiatics and Anglo-Indians the mortality was only 1·5, and among Indian Christians 1·4 per 1000. For all classes combined the female mortality was 4·1, as compared with 2·9 for males. Amongst infants and children up to 5 years of age the deaths numbered 1115, being 38 per cent. of the total small-pox mortality, exactly the same proportion as in 1919; this "seems to indicate that a large number of children are unvaccinated," and this was found to be the case in Ward 14 (Taltollah). Dr. Crake emphasises the vital importance of revaccination in the tropics: "in fact it is hardly an exaggeration to say that in the tropics primary vaccination cannot be relied upon as a preventive of small-pox. In many cases it merely gives temporary protection." The phrasing of this opinion is rather unfortunate, and antivaccinators may not improbably quote the first clause as an argument against the necessity for vaccination in toto, which, of course, is the very reverse of Dr. Crake's intention. Later on Lieut.-Colonel A Leventon, I.M.S., superintendent of the Campbell Hospital, states distinctly that "the onus falls on each and every person to be protected by vaccination and revaccination, and as the operation need not cause hardly a moment's discomfort it is folly to be unprotected; and it may be necessary at no distant date to penalise those people who have gone through an attack of small-pox, whereby, by reason of their slackness or perversity, they have become a charge and a burden on the State, and the parents of children suffering from the disease should be cited before a magistrate for disciplinary measures." This *argumentum ad crumenam* is perfectly sound, and may appeal to persons who are unable to appreciate (or understand) the value of vaccination. The accommodation available was taxed to the utmost, but the emergency was satisfactorily met by the energy of the medical and nursing staff. Lieut.-Colonel Leventon states that "no case of small-pox was refused admission to hospital"; at this hospital, with a nominal bed-strength of 164, as many as 240 patients were under treatment at one time; additional accommodation was found by erecting sheds for convalescents.

The recorded deaths from enteric fever numbered 360 giving a ratio of 0·40 per 1000, compared with 0·44 in 1919, and higher than any year in the quinquennium (1915–19); it prevailed throughout the year, being most fatal in May, September, and October, when the deaths numbered 42, 38, and 42. In Wards Nos. 4 (Sookeeas-street) and 22 (Bhowanipur) the death ratios were 0·74 and 0·73 per 1000; in No. 24 Ward (Kidderpore and Ekbalpur), which has the highest *total* mortality ratio (76·8) in the whole city, the enteric death ratio was only 0·04, being lower than in any other ward except Hastings, the only one where there were no deaths from this disease. Dr. Crake considers that enteric is not, to any great extent, a waterborne disease in Calcutta, but that infection is chiefly caused through "carrier cases." The enormous difference between the mortality ratios in Mohammedans (0·08), Hindus (0·50), and Indian Christians (1·2) is noteworthy. Among non-Asiatics and Anglo-Indians the ratio was 0·61 per 1000.

Malaria caused 1289 deaths (1·4 per 1000), the ratio being somewhat higher than in any year since 1915, when it had been the same. The greatest prevalence was recorded in the adjoining Wards 11 and 14 (Puddopooker and Taltollah), 2·9 and 2·8 per 1000; but if "other fevers" are combined with "malaria" deaths, the total ratio for the city becomes 3·7, and the wards most affected Nos. 21 (Ballygunge and Tallygunge) with 6·1; and No. 14 (Taltollah) with 5·9 per 1000. Undiagnosed influenza probably accounted for a great deal of the "fever" mortality in the non-malarious wards, but "all over the city there are thousands of potential, if not actual, breeding places for mosquitoes: in some parts 60 per cent. of the reserve tanks examined contained anopheles larvæ." Mohammedans had a fever mortality-rate of 2·9, while for Hindus the ratio was only 0·95 per 1000; among Indian Christians the ratio was 0·50, and for non-Asiatics and Anglo-Indians only 0·32 per 1000. Under the heading of "Other fevers" the mortality was considerably greater than for malaria, the total deaths numbering 2065, giving a ratio of 2·3 per 1000; the wards most affected were Entally (5·5), Ballygunge (4·8), and Hastings (4·3).

"One of the few satisfactory features in the vital statistics for 1920 is the decline in mortality from diarrhœal diseases"; the ratio fell from 3·9 to 3·5 per 1000; in Park-street Ward it was only 0·94, and in Bamun Bustee 0·96; in Kidderpore it was 7·5, and in Bhowanipore 6·3. The excess in the wards named was probably due (at any rate in part) to the inadequate supply of filtered water in the south of the city, owing to the waste that occurs in the northern wards. An increase has to be recorded in mortality from tuberculosis, the death ratio being 2·4, compared with 2·1 per 1000 in 1919; this has been due to influenza, or post-influenza debility, diminishing resistance to infection; 2022 out of 2120 cases were pulmonary, infection having probably been spread directly or indirectly through sputum. The highest death ratios occurred in Wards 20 (Baniapooker) and 21 (Ballygunge), where the mortality was 3·6 and 3·3 per 1000—both these wards are "suburban": "a dark, damp, ill-ventilated hut in an open suburb is evidently just as deadly as a badly lighted and ventilated room in the heart of the city." Dr. Crake strongly emphasises what he considers to be "the most striking figures in the whole of the vital statistics": the death-rate from tuberculosis among females was 3·6, among males 1·7 per 1000. In the age-group 10 to 15 years the male death ratio was 0·32, that for females 2·1; from 15 to 20 years, the ratios were 1·3 and 6·5; from 20 to 31 years, 1·7 and 5·9. "For every boy that dies of tubercle six girls die; for every young man that dies of tubercle five young women die." The chief cause of this "appallingly high rate" amongst females is, of course, the *purdah* system. The zenana is almost invariably in the inner portion of the house, ill-lighted and ill-ventilated, but effectually screened from observation.

Respiratory diseases caused 9·1 deaths per 1000, as compared with 9·2 in the previous year. In Kidderpore ward the ratio was extremely high, 35·6 per 1000; a considerable proportion of deaths must have been due to influenza; but this ward always has a high mortality, largely due to defective drainage and flooding during heavy rain. There was a marked fall in influenza mortality (as recorded), 1·8 compared with 3·7 per 1000 in 1919; in Alipore Ward the ratio was 3·1. Dr. Crake acknowledges that any accurate estimate of the number of deaths from influenza is impossible, but considers the actual mortality to have been about 5000, compared with an estimated 7000 in each of the two years preceding. Relief centres were kept open in all badly-infected areas. Epidemic dropsy caused 112 deaths, compared with 96 in 1919; the outbreak prevailed chiefly during January, February, and March, when 67 out of the 112 deaths occurred; it was most severe in Wards 3, 4, and 6 (Burtollah, Sookeas-street, and Jorasanka) in the north, and Ward 25 (Watgunge and Garden Reach) in the south; females suffered much more than males (0·25 and 0·06 deaths per 1000 respectively). Dr. Crake considers that there is no doubt that it is a specific infectious disease; the high percentage of cases with gastro-intestinal symptoms seems to indicate infection through the gastro-intestinal tract. The intense local house infection, its spread through the agency of human beings, but not from man to man, its sudden appearance and disappearance, all support Belany's theory that infection is caused by the bed bug. There was also an increase in kala-azar, which caused 162 deaths (0·69 per 1000), as compared with 97 deaths in 1919; but 48 of these were imported cases. More than 25 per cent. of the deaths (misprinted "cases" on p. 35) occurred in Wards 1, 9, and 22 (Shampuker, Mocheepara, and Bhowanipur).

As to sanitary work generally, many important improvements were carried out in regard to drainage, insanitary buildings, and supervision of food supplies; unfortunately no further progress was made during the year in connexion

with the scheme for a dairy-farm and city dairy prepared by Lieut.-Colonel J. Matson. A vigorous vaccination campaign was carried out, the total number (primary and revaccinations) performed amounting to 222,092; in 23,281 primary, with a success ratio of 99·2 in four-point insertions, and 98·8 in two-point insertions. Bacteriological examination of the Hooghly water showed a total count varying from 11,000 to 1,170,000 per c.cm., lactose fermenters being present in 0·1 c.cm. in 67 per cent. of the samples; after settling and filtration the total count varied from 5 to 68 per c.cm., and lactose fermenters were always absent in 10 c.cm.

This most valuable report contains much other matter of interest, and is illustrated by numerous diagrams, and a useful plan of the city showing ward boundaries. According to Whitaker, the population of Calcutta (in 1921) was 1,263,292; it is therefore the largest city in our Empire, after London. The responsibility of the health administration is very great, and the difficulties it has to contend with enormous. This report contains ample evidence of the skill, energy, and perseverance of the medical officer, and his staff, in the face of difficulties which can only be fully appreciated by those who are familiar with the climate, and the people, and the conditions of life that produce an infantile mortality ratio of 300 to 600 per 1000 births.

## THE ENGLISH COLONY IN DAVOS.

DAVOS has in the recent winter regained something of its pre-war aspect. In the week ending March 2nd, 1923, out of a total 3146 visitors (106 whereof were tourists) 306 were of British and 59 of American nationality. Swiss were 1292, Dutch 362, Germans and Austrians 297, and French 209. During the whole winter season, since Oct. 1st, 1922, 980 British and 130 American visitors were present. The English Sanatorium in the Hotel Frei, to which Dr. A. F. Bill and Dr. Florian Buol are visiting physicians, had 26 inmates on March 2nd, not including Mr. C. Healy, secretary, and Nurse Margaret Pestalozzi.

## POST-NATAL CYANOSIS.

*To the Editor of* THE LANCET.

SIR,—In some cases of cyanosis occurring in infants at an interval after birth a simple but efficacious way of overcoming an alarming condition is to keep the child in a position of semi-inversion by tilting its cot at an angle of 35° to 40°. In the three instances that I have encountered each patient seemed to be almost in extremis, but when this posture was adopted was quickly relieved, and each made a complete recovery.—I am, Sir, yours faithfully,

Birmingham, March 7th. FRANK PARRY, L.R.C.P. Irel.

## THE NATION'S YOUTH AND THE DRINK BILL.

IN the *Times* of March 13th appears, over the signatures of Lord Dawson, Sir Thomas Barlow, Sir Thomas Horder, and Sir George H. Makins, a letter calling for the support of all who are interested in the physical and moral welfare of young people for the Teachers' Bill amending the law relating to the sale of intoxicating liquor to adolescents. To this measure, which Lady Astor introduced in Parliament on March 9th, we referred in our last week's issue (p. 500). We are glad to note such evidence of medical support for the Bill, which, to quote Lord Dawson and his colleagues, "is a matter quite apart from the principle of general prohibition."

## SCHOOL ABSENCES OF BOYS AND GIRLS.

A COMPARISON of absences from school on account of sickness has been carried out by Mr. E. D. Collins, assistant statistician to the United States Public Health Service, who found that in practically all age-groups the girls were absent from school from sickness more than the boys. Taking all ages together the rate for girls was 9 per cent. greater than for boys. Taking absences from other causes than sickness, boys showed 18 per cent. more absences than girls. Comparing age curves of absence from sickness, it appears that the two curves are similar—high at 6–7 years and declining as age increases. In absence from other causes than sickness the curve decreased up to 10 or 11 years, and then increased with age.

## THE ORDER OF ST. JOHN: SPA TREATMENT AT LLANDRINDOD WELLS.

WE have received from the Order of the Hospitallers of St. John of Jerusalem (Priory for Wales) a booklet descriptive of the spa treatment at Llandrindod Wells, instituted by the Order. Here disabled ex-Service men under the Ministry of Pensions, and civilians also, can obtain good accommodation and medical attendance at a modest figure.

The institution has been established for the accommodation and treatment of those suffering from the effects of rheumatic and gouty conditions, neuritis, colitis, obesity, eczema and skin complaints, liver, and other trouble due to residence in tropical climates, dyspepsia, debility, stomach complaints, &c. No infectious or incurable cases are accepted. Applications for admission (which are considered in rotation) should be addressed to the Secretary, with a letter of recommendation from a responsible person or approved institution, testifying to the applicant's inability to pay ordinary fees. The weekly tariff, including board, accommodation, treatment, waters, and medical attendance (one visit per week) is 3½ guineas. The average length of stay is four weeks, the Order reserving the right to terminate treatment at any time; the principal object of the establishment is to provide not holiday accommodation, but definite spa treatment. All communications should be addressed to Mr. George R. Baillie, Spa Treatment Establishment, Llandrindod Wells, Mid-Wales.

## CARE OF MATERNITY IN SPAIN.

AN Act which has just been passed gives the Spanish Government power to proceed with the ratification of the "Maternity Convention" adopted by the First International Labour Conference held at Washington in 1919. Under the terms of this Convention it is provided that a woman in any public or private industrial and commercial undertaking shall not be permitted to work during the six weeks following confinement and shall have the right to leave her work six weeks beforehand on production of a medical certificate. During this time she shall be paid benefits sufficient for the full and healthy maintenance of herself and her child, provided either out of public funds or by means of a system of insurance, and, as an additional benefit, shall be entitled to free medical attendance. She shall also, if nursing her child, be allowed half an hour twice a day during her working hours for this purpose. The same Act authorises the Spanish Government to institute, as a means of applying these provisions, a compulsory maternity insurance system, the scheme of which shall be drawn up by the Ministry of Labour after consultation with the Institute of National Welfare.

## DETECTION OF UNERUPTED HUTCHINSONIAN TEETH BY X RAYS.

THE presence of Hutchinsonian teeth in congenital syphilis has long been recognised as a valuable diagnostic sign, although their absence by no means precludes the diagnosis of syphilis. It frequently happens that when the teeth are affected so many other signs are present that the diagnosis is beyond doubt, but, when the diagnosis is not easy to make, it becomes important to discover every sign which may point to congenital syphilis. The upper central incisors, which are the typical teeth affected, do not erupt until about the age of 7, so that ordinary clinical examination cannot give information on this point before that age. J. H. Stokes and Boyd Gardner, in an interesting note in the *Journal of the American Medical Association* for Jan. 6th, 1923, point out that the shape of these teeth can be determined by a radiograph before their eruption. The upper incisors begin to calcify during the first year of life and the crowns are complete at about three and a half years: thus, from the age of 3 sufficient of the crown has been formed to demonstrate the peculiar shape of these teeth in congenital syphilis. It must be remembered that only a minority of children with congenital syphilis present Hutchinsonian teeth, but on the other hand there are cases in which the dental stigma may be chief, or, indeed, the only distinct sign present. Radiography is now generally available, while an intra-oral film is not difficult to take, even in a child, so that this method of ascertaining the shape of the unerupted incisors should prove useful in doubtful cases.

## PUBLIC HEALTH IN HONG-KONG.

IN a report for 1921, prepared by the Colonial Secretary, Mr. A. G. M. Fletcher, it is stated that, according to the census taken in April, the civil population was 625,166, as compared with 561,026 in 1911. The non-Chinese community numbered about 14,000. The birth-rate is put at 5·68 per 1000 among the Chinese (though this figure is wholly misleading, as it is impossible to register more than a portion of the births) and 25·88 per 1000 among the non-Chinese. The death-rate for the year was 20·29 per 1000 among the Chinese and 18·08 among the non-Chinese. There were 332 deaths from malaria, 130 from plague, and 162 from small-pox. Deaths from respiratory diseases other than pulmonary tuberculosis numbered 3832. Pulmonary tuberculosis claimed 1318 Chinese and 25 non-Chinese victims, whilst other forms of tuberculosis accounted for an additional 576 deaths. Beri-beri was responsible for 526 deaths, as against 361 in 1920 and 555 in 1919. In the Civil Hospital, which contains 170 beds, 4815 in-patients and 27,322 out-patients were treated during 1921. Victoria Hospital at the Peak contains 41 beds, and 213 patients were treated there. At Kennedy Town Infectious Diseases Hospital 70 cases were treated. At the Tung Wa Hospital (for Chinese only) there are 330 beds, and 7211 patients were accommodated during 1921. Four district plague hospitals are maintained by the Chinese in various parts of the colony. The Kwong Wa Hospital for Chinese, in the Kowloon peninsula was opened in 1911; the patients treated there during 1921 numbered 4486.